

UNITED STEEL SASH



**KAHN
SYSTEM**

Building
Products

TRUSSED CONCRETE STEEL COMPANY
DETROIT



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Copyright 1912
Trussed Concrete Steel Co.
Detroit, Michigan.

U^{nited} S^{teel} SASH

INCLUDING

SIDEWALL SASH

WITH PIVOTED OR SLIDING VENTILATORS

CONTINUOUS SASH

CENTER PIVOTED OR TOP HUNG, FOR MONITOR
AND SAWTOOTH ROOF CONSTRUCTION

HINGED AND SLIDING DOORS

METAL AND GLASS PARTITIONS

CASEMENT SASH

AND

SPECIAL SASH

FOR ALL REQUIREMENTS

*Cost. 18 to 35¢ per sq. ft. of the opening.
Depending on size of light, amount of ventilation, standard
or special sash.*



FIFTH EDITION

1912

TRUSSED CONCRETE STEEL CO.
DETROIT, MICH.

United Steel SASH



Dodge Bros. Plant, Detroit, Mich.

Albert Kahn, Architect,
Ernest Wilby, Associate.

Equipped with over 100,000 sq. ft. of United Steel Sash.

Interior View is Shown on Front Cover. Note Perfect Daylighting—United Steel Sash extend up to ceiling and full width between narrow pilasters. The Flat Ceiling Kahn System Construction does away with all obstructing beams.



Modern One-Story Factory, Well Lighted, Fireproof and Economical. Standard United Steel Sash in Side Walls. Continuous United Steel Sash in Monitors. Concrete Ceilings and Roofs Reinforced with Hy-Rib.

Features of United Steel Sash

In modern buildings requiring maximum daylight, proper ventilation, and greatest permanency, United Steel Sash are an essential feature of the construction. The day of wooden sash is past, because they shut out the daylight, are short-lived, and in case of fire spread the flames, instead of retarding them. With United Steel Sash your building is flooded with daylight and is fireproof and permanent to the highest degree.

United Steel Sash are low in cost and in the majority of cases can be installed as cheaply as wooden sash. The economy and actual money-saving in United Steel Sash, which are proof against fire and decay, should appeal to all builders.

Maximum Daylight

With United Steel Sash the entire area of window opening is available for lighting. There is practically no obstruction to the light at the muntins, mullions, lintels or jambs. The deep, narrow, symmetrical sections of United Steel Sash offer a striking contrast to the wide, light-obstructing members of the ordinary wooden and many metal frames.

Daylight interiors with United Steel Sash are the greatest economy in factory construction, increasing the quantity of the output and improving its quality. Daylighting reduces scrap piles, increases the available working space and cuts down lighting bills.

United Steel Sash flood the interior with daylight, and lighten up the dark corners where filth and waste materials accumulate in dimly lighted factories. Daylight exposes these rubbish piles, and improves the sanitary conditions. Full efficiency of every workman is assured.

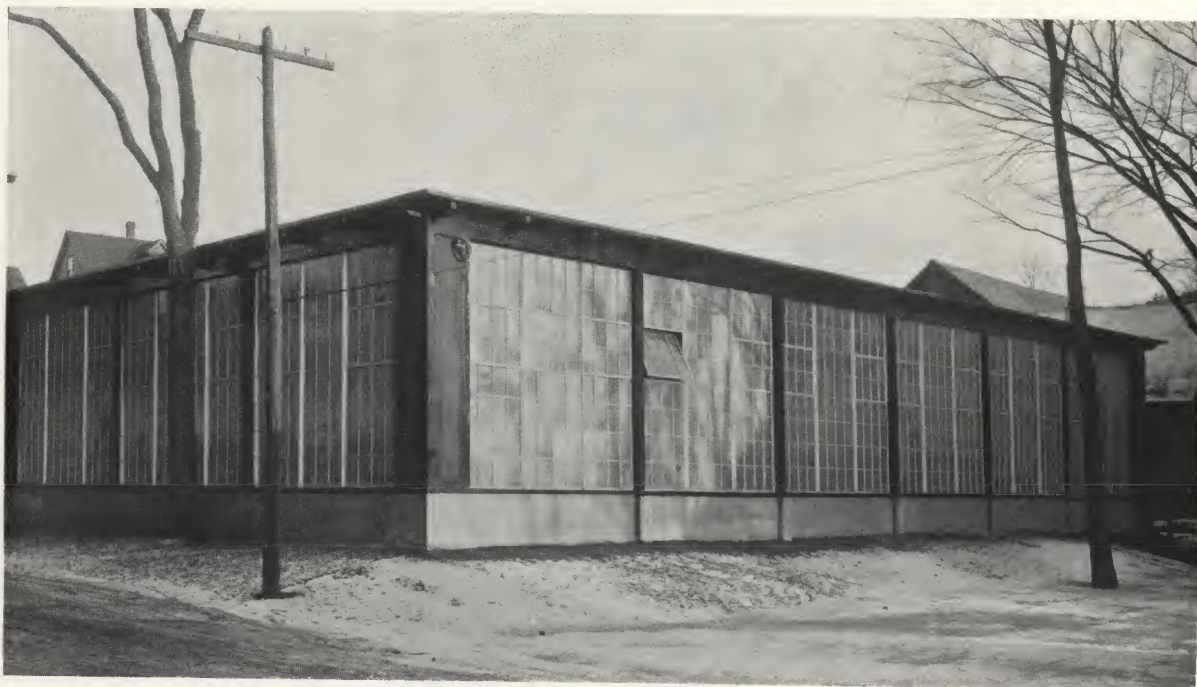
Ventilation

With the United Steel Sash a maximum amount of ventilation can be obtained, as the large ventilators can be designed to extend the full width of each unit. The ventilation can be placed at any point in the sash, which will give the desired results for each specific case. They can be placed at the extreme top or bottom of the sash, at the bottom in order to derive the most benefits from the fresh air as it enters the building, and at the top to be most efficient in removing the foul air and obnoxious gases. Good ventilation makes workmen active and industrious.

Standard Side Wall Sash with large ventilators near the bottom of the sash in connection with the center pivoted continuous sash in the monitors or sawtooth roof, is the most effective ventilation possible for foundries, forge shops, machine shops and other types of one-story structural steel buildings. This arrangement of sash provides an even distribution of fresh air and light throughout the entire area of the building.

Weatherproofness

The joints of the United Steel Sash fit perfectly, being made absolutely weather proof by means of powerful presses. The design of each type of ventilator has been very carefully studied so as to be absolutely weatherproof, preventing the entrance of drifting rain and shutting out all drafts. Improved locking devices keep the ventilators tightly closed.



Brampton Woolen Mills, Newport, N. H.
United Steel Sash Used Throughout. Note Perfect Lighting of Interior.

Strength and Rigidity

United Steel Sash are made up of specially rolled sections of the best grade of steel. These sections are combined to form deep, narrow, symmetrical members, giving the greatest possible rigidity against direct wind pressure and suction caused by passing air currents. Other forms of sash do not have the same strength and rigidity, because the sections are unsymmetrical, with an excess of metal on the weather side and an insufficient amount on the inside.

In United Steel Sash there is no weakening of the members by cutting out or punching the metal at the joints. Other types of steel sash are assembled by punching holes in the sections and passing one member through the other, which materially weakens the frame. In United Steel Sash the full strength of the section is developed at every point. Because of the deep, symmetrical sections and the absence of weakening the members by cutting away metal, the United Steel Sash offers a stiffness against pressure 50% to 100% greater than other steel sash on the market.

Workmanship

United Steel Sash are machine-built with multiple dies operated by powerful presses and are of necessity, absolutely accurate and uniform throughout. All joints are mitered. United Steel Sash have a particularly neat and attractive appearance.

Glazing and Re-Glazing

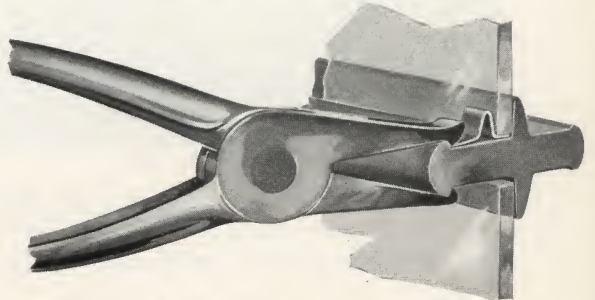
The glass in United Steel Sash is held firmly by special spring clips which are readily set in place by means of specially designed pliers, as illustrated. These spring clips constantly press the glass against the putty, assisting very materially in keeping out the weather.

The old method of glazing, consisting of pins pushed through holes in the steel sections, has always been unsatisfactory because the variation in the thickness of the glass made it impossible to secure a close fit without danger of breaking the glass. The special spring clips firmly press the glass against the putty, and at the same time have enough elasticity to take up the variation in the glass and to absorb the shock of vibration.

The continuous ledge extending along the entire length of the steel section, prevents the putty from working loose or cracking away. The sash sections are so designed that a saving of over 50% is made in the amount of putty required. This fact together with the use of the spring clips makes the cost of glazing United Steel Sash very low.



Position No. 1. Showing Pliers starting to push the Spring Clip in place.



Position No. 2. Showing the Spring Clip completely in place.



McDonald & Applegarth, Architects.

Monotti-Larimer Building, San Francisco

Note Attractive Appearance of United Steel Sash for store building.

TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.

Reglazing: In reglazing United Steel Sash it is only necessary to remove the putty in the pane to be replaced. If steel pins are used the putty in all of the surrounding panes must be removed.

Spring Clips and one pair of Glazing Pliers are furnished free with each order of United Steel Sash.

Glass For United Steel Sash

All kinds of glass can be used with equal facility in United Steel Sash. We are prepared to furnish estimates on the following:

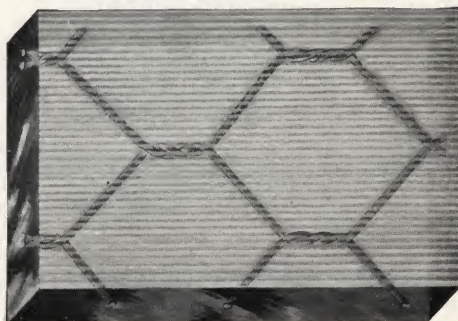
Single and Double Strength American Sheet Glass of all grades.

Rough and Ribbed Glass of all thicknesses.

Ribbed and Rough Wire Glass of all thicknesses.

Polished Plate Wire Glass.

Figured and Special Glass of various types.



Wire Glass

United Steel Sash Putty

United Steel Sash Putty represents the result of extensive practical tests to determine the best product for metal sash. It glazes easily and smoothly, shows a perfect adhesion for both metal and glass, hardens throughout evenly and uniformly in a comparatively short time to a tough and resistive body, costs no more than any good grade of putty, and gives results that are far more efficient and satisfactory.

Universal Adaptability of United Steel Sash

United Steel Sash are manufactured in standard units which are combined by means of mullions to fit openings of any desired width or height. These units are manufactured in a number of different types, each designed to fill a particular requirement, as follows:

No. 1, Standard Side Wall Sash with either sliding or pivoted ventilators, for factories, foundries, warehouses, industrial buildings, etc.

No. 2, Continuous Center Pivoted and Top Hung Sash for monitor and sawtooth roof construction.

No. 3, Horizontal Sliding Sash for side walls and monitors of mill buildings.

No. 4, Hinged and Sliding Doors.

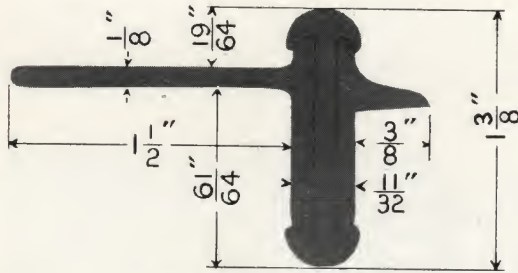
No. 5, Office and Factory Partitions.

No. 6, Casement Sash for Offices and Fine Residence Buildings.

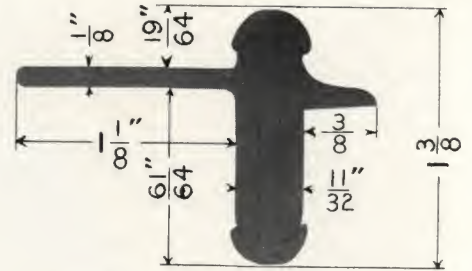
No. 7, Special Sash to meet all requirements.

Engineering Service

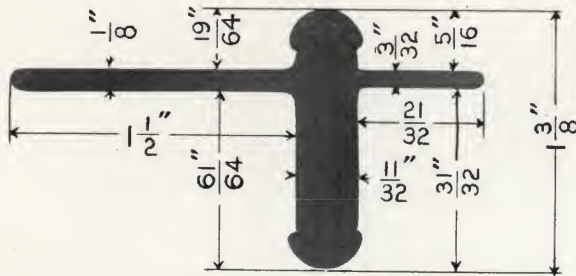
The United Steel Sash is one of the Kahn System Products, and is backed up by the efficient engineering service which has made the use of all of our products so successful. This engineering service consists of complete estimates, designs, details, expert advice regarding best methods of lighting and ventilation, and full co-operation with owners, architects, engineers and contractors. The Kahn System Engineers are located in all the principal cities, and are always ready to give direct personal service so essential to successful building construction.



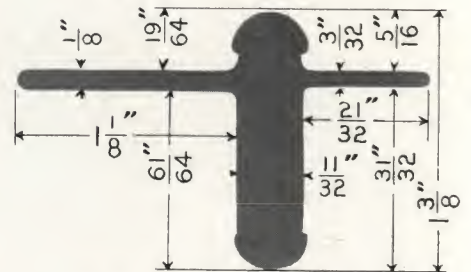
NO 128 SECTION
(No 8 Regular)



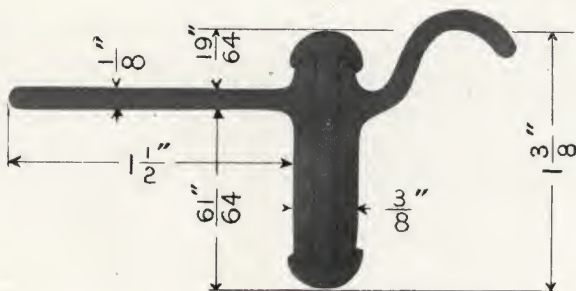
NO 124 SECTION
(No 4 Regular)



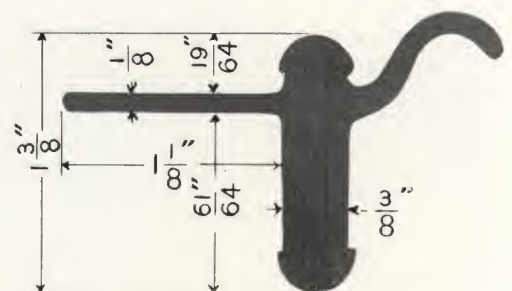
NO 728 SECTION
(No 8 Regular)



NO 724 SECTION
(No 4 Regular)



NO 528 SECTION
(No 8 Regular)

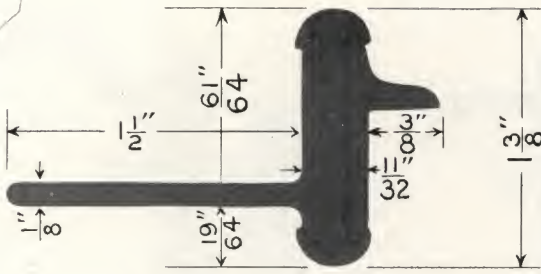


NO 524 SECTION
(No 4 Regular)

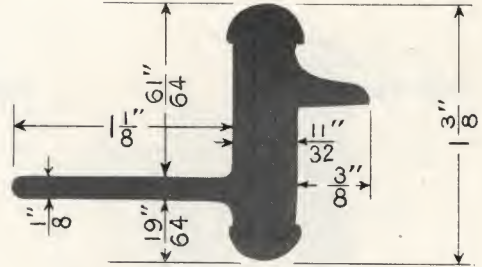
Outside Angle Sections of United Steel Sash

TRUSSED CONCRETE STEEL CO.

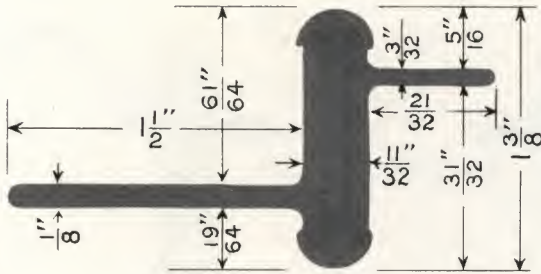
DETROIT MICH., U. S. A.



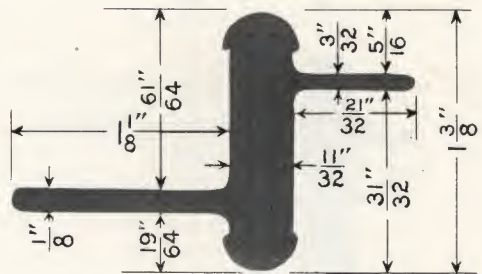
NO 128 SECTION
(No 8 Reversed)



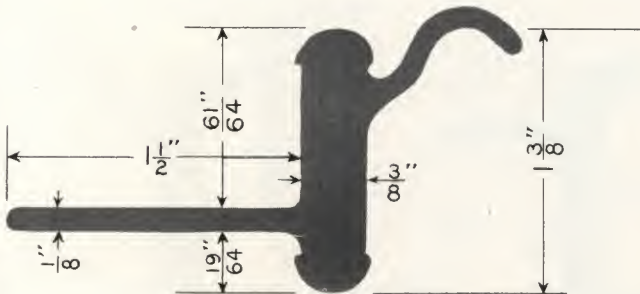
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(No 4 Reversed)



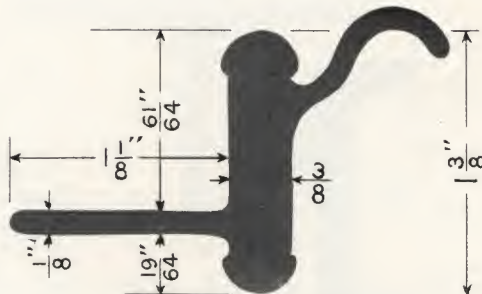
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(No 8 Reversed)



NO 724 SECTION
(No 4 Reversed)

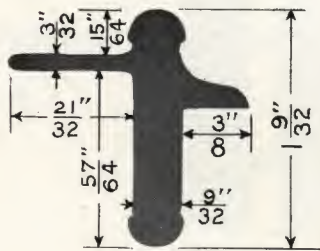


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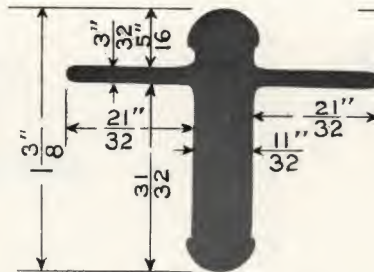


NO 524 SECTION
(No 4 Reversed)

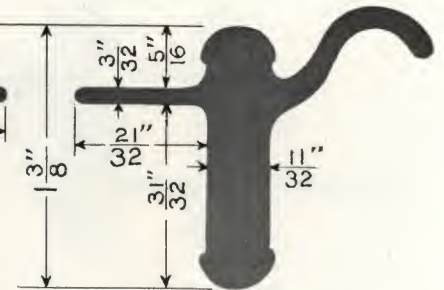
Outside Angle Sections of United Steel Sash Similar to Sections on
Page 8 With the Location of the Bearing Lugs Reversed



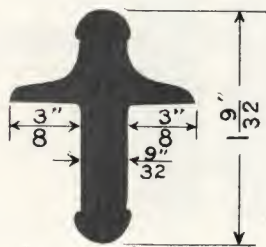
No 107 SECTION



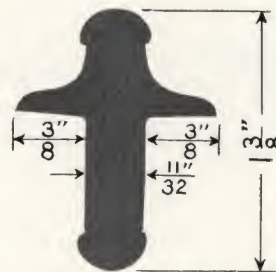
No 727 SECTION



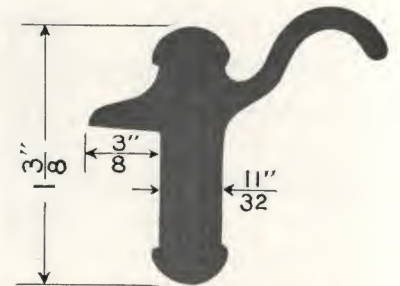
No 527 SECTION



No 101 SECTION

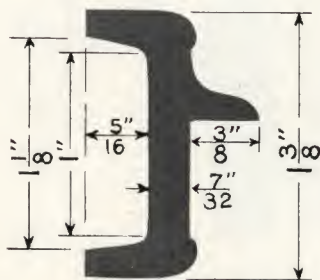


No 121 SECTION

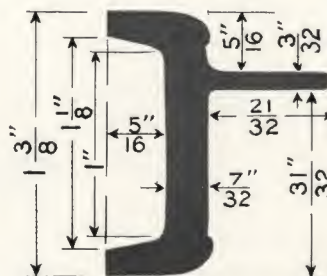


No 125 SECTION

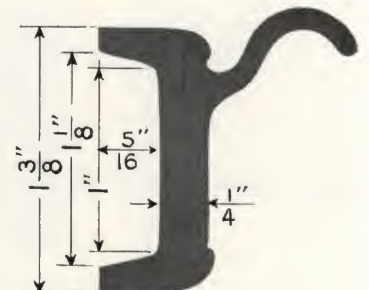
Interior Horizontal and Vertical Muntins of United Steel Sash



No 13 SECTION



No 73 SECTION

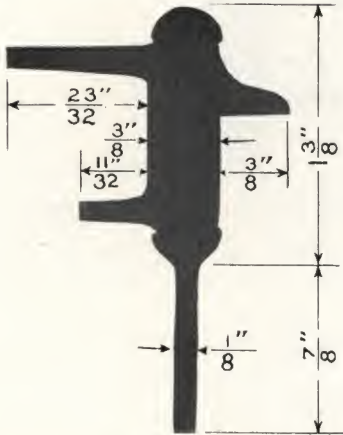


No 53 SECTION

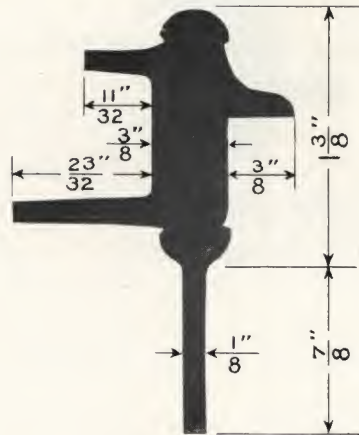
Outside Channel Sections of United Steel Sash

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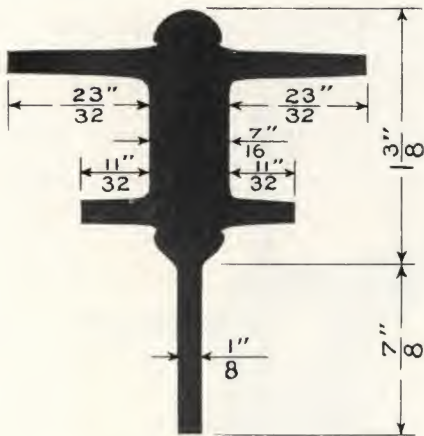
DETROIT MICH., U. S. A.



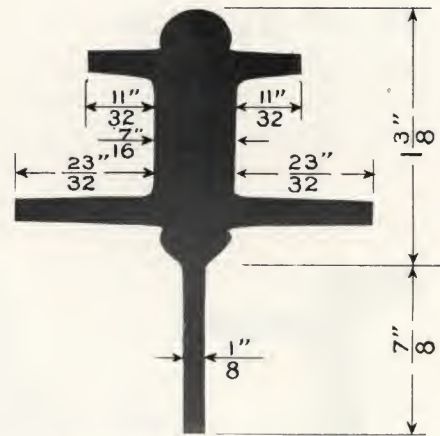
Nº 196 SECTION
(*Nº 6 Regular*)



Nº 196 SECTION
(*Nº 6 Reversed*)

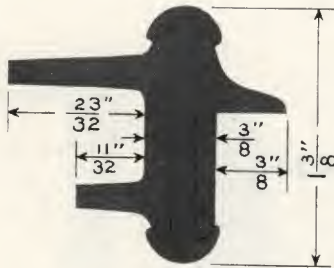


Nº 696 SECTION
(*Nº 6 Regular*)

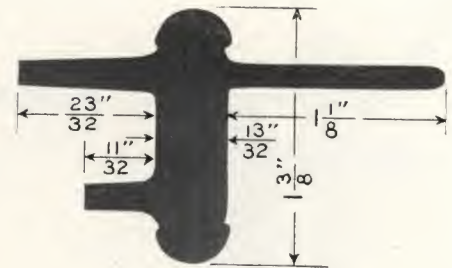


Nº 696 SECTION
Nº 6 Reversed

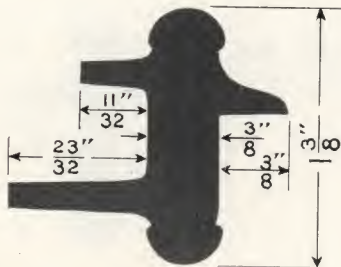
Casement Sash Sections



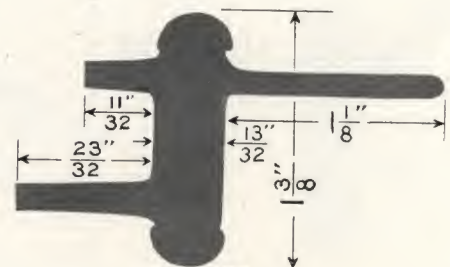
NO 126 SECTION
(No 6 Regular)



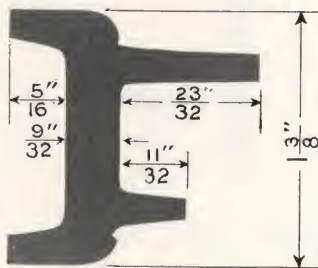
NO 624 SECTION
(No 6 Regular)



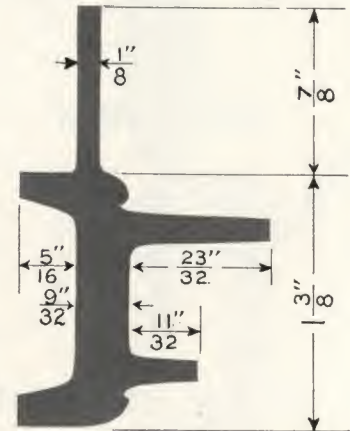
NO 126 SECTION
(No 6 Reversed)



NO 624 SECTION
(No 6 Reversed)



NO 63 SECTION



NO 6 A SECTION

Casement Sash Sections

United Steel Sash Mullions

The following pages 14 and 15, inclusive, show five types of mullions.

Type A. (shown on page 14)

Used with all types of (both ventilated and unventilated) sash in height up to 14'—0".

Type B. (shown on page 14)

Similar to Type A, except that it can be used in greater heights than 14'—0".

Also used as horizontal mullion in large openings in power houses, etc., when more than one sash in height are required to fill the opening.

Type C. (shown on page 15)

Used with all types (both ventilated and unventilated) sash of practically any height by using the proper size of outstanding plate.

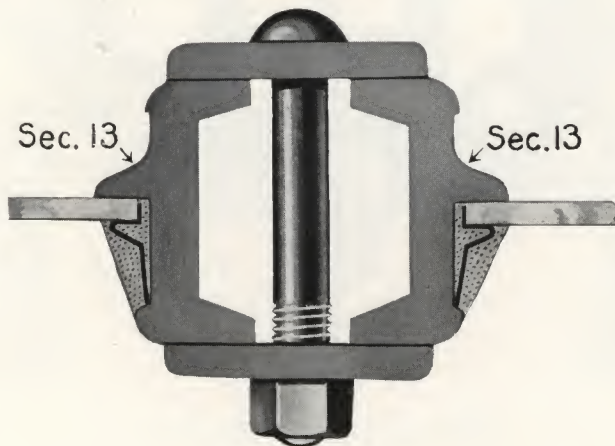
Type D. (shown on page 15)

Similar to Type C, except that it is limited to a height of 8'—0". Also used in continuous pivoted and top hung sash.

Type E. (shown below)

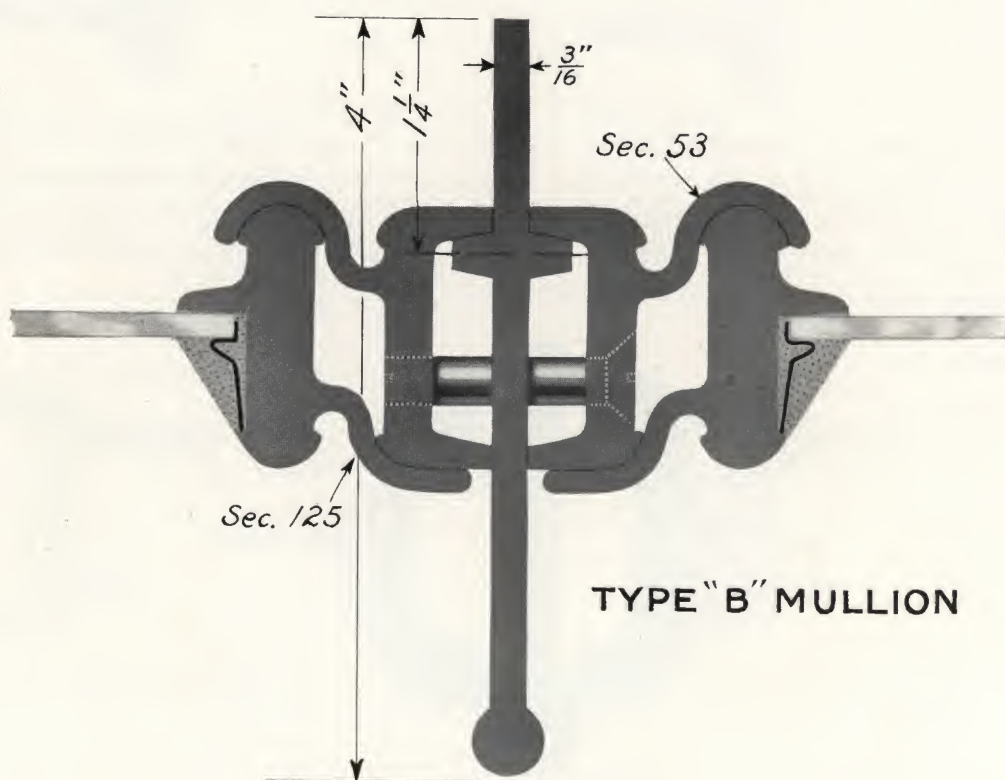
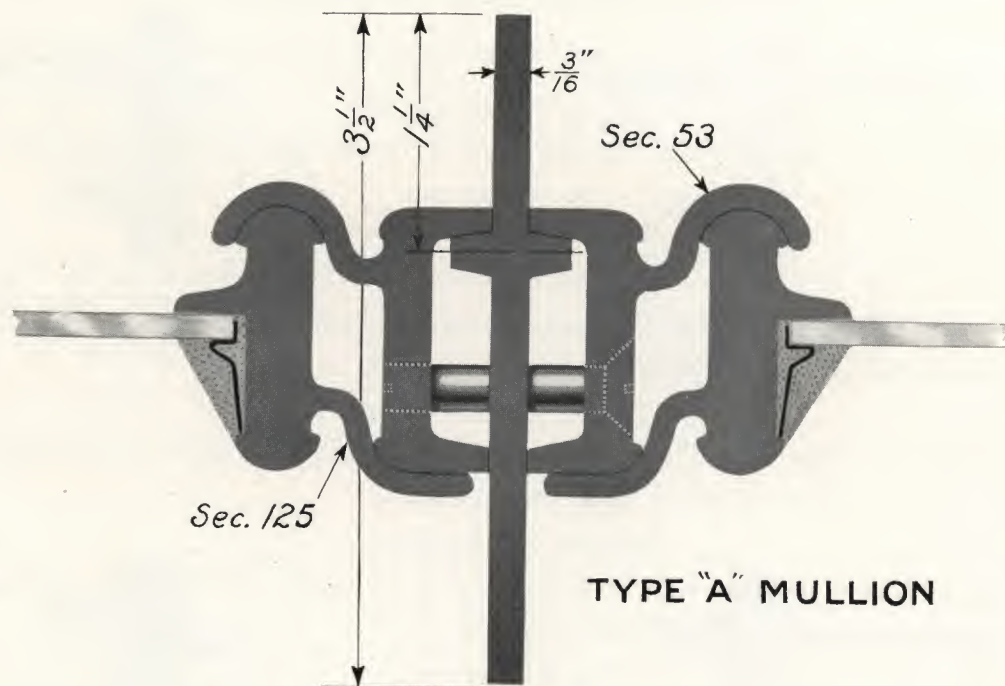
Used with sash where the ventilators do not extend to the mullions, and with unventilated sash. Suitable for sash up to 10'—0" in height.

We wish particularly to call attention to the fact that Types "C," "D" and "E" mullions have been designed to allow for expansion, and have enough flexibility to take up the inaccuracies and variations, which are unavoidable in building construction work. This is a very important feature, as it reduces the cost of installation to a minimum, and also does away with the chipping and patching, which may be necessary with mullions which do not allow for variation.



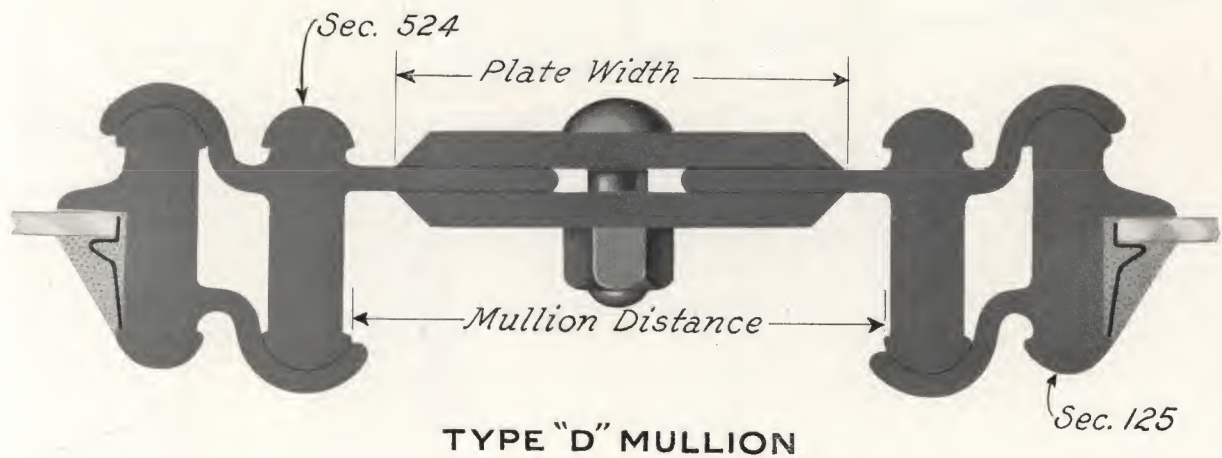
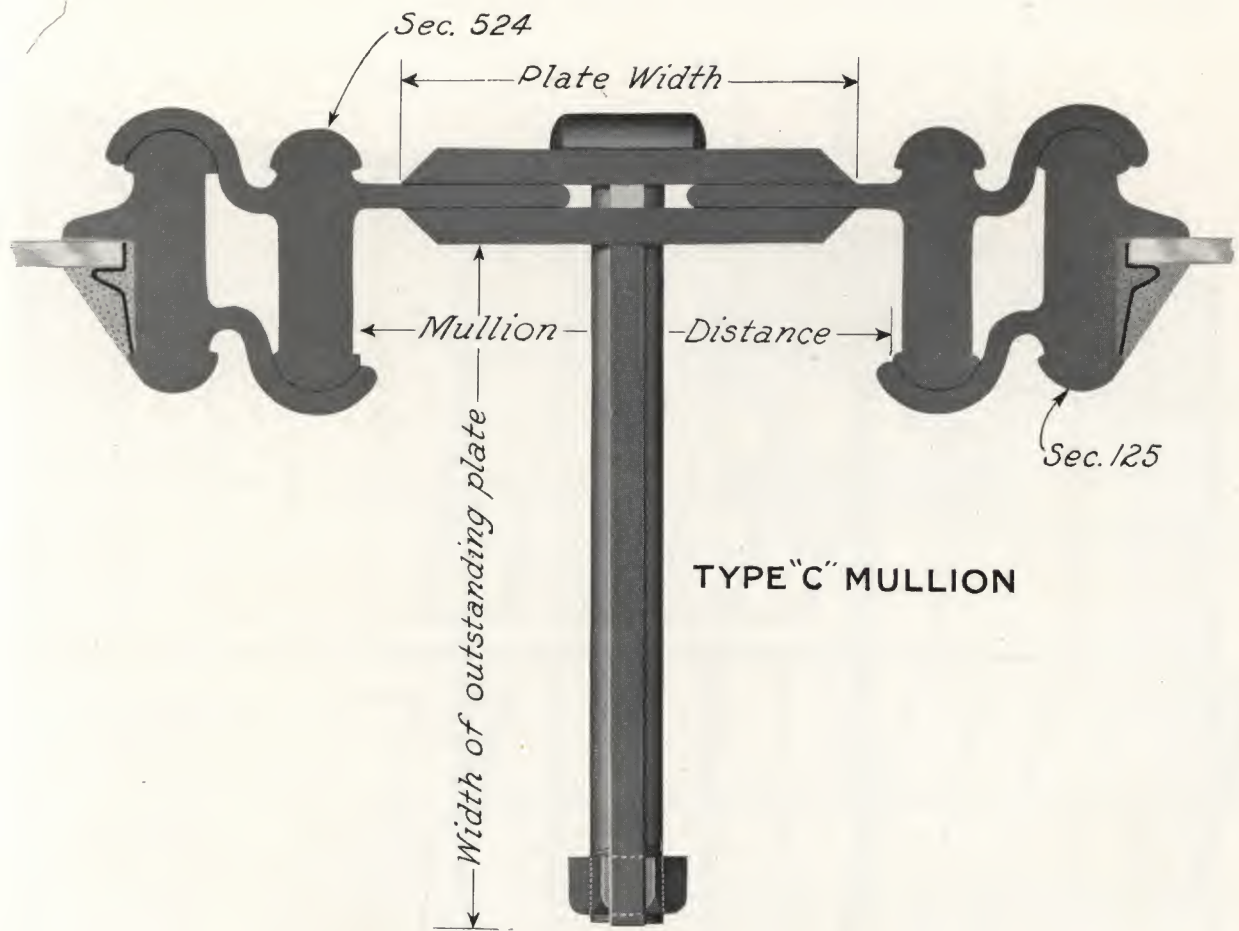
Type E. Mullion

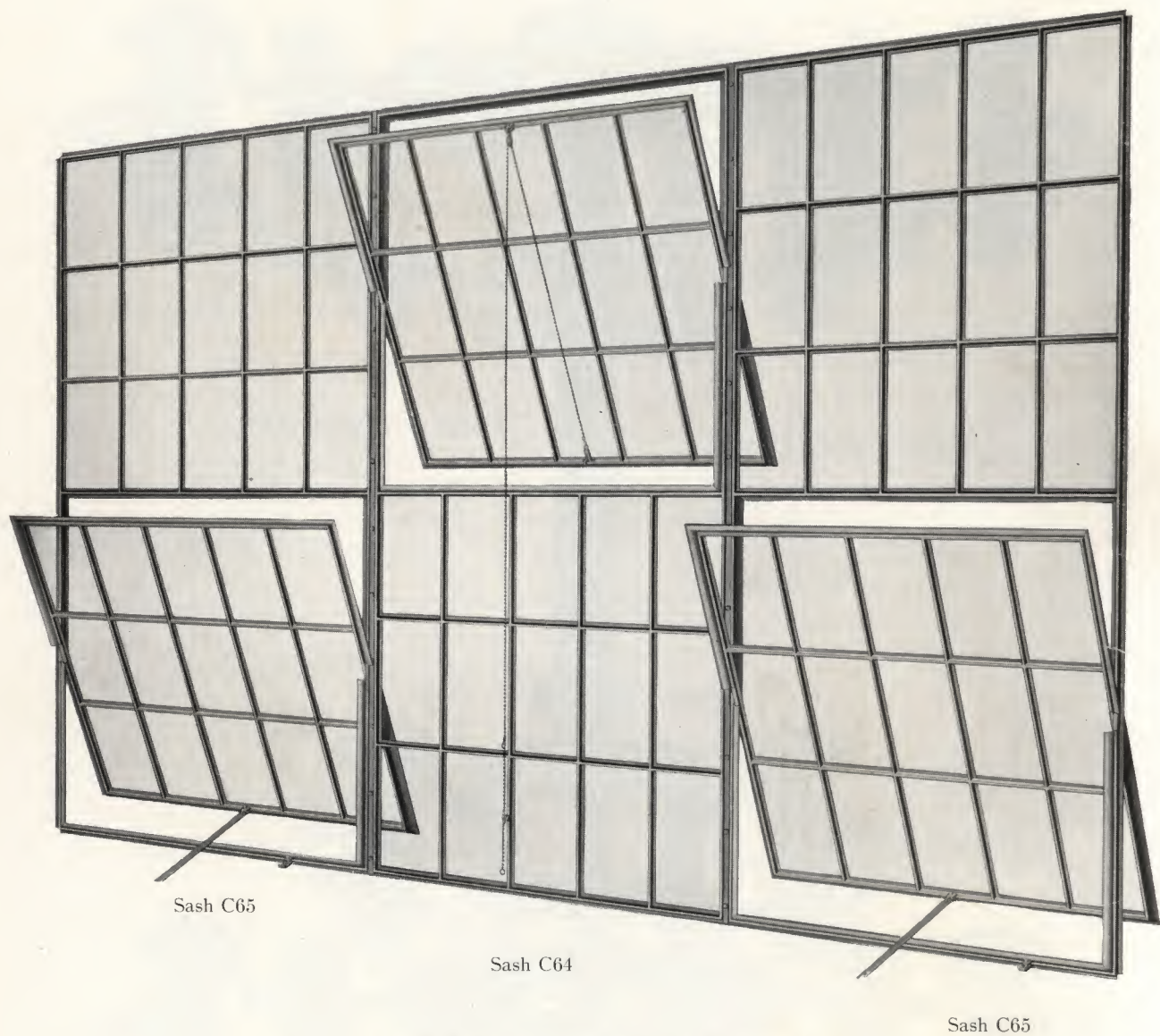
(Used only with Unventilated Sash)



TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.





One of the Many Typical Bays of

United Steel Sash

Made up of Three Standard Units, Combined by
Standard Mullions.

Standard United Steel Sash with Pivoted Ventilators

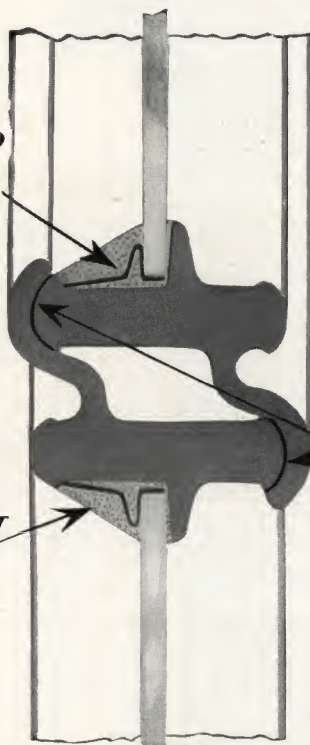
The pivoted ventilators of standard side wall sash represent a marked improvement in steel sash design. The curved mouldings around the ventilator frame completely covers the opening joints, and the double circular surface contact makes the closed ventilator absolutely weather-proof. This heavy moulding stiffens the ventilator and keeps it true and rigid, so that the ventilator when closed bears tightly at all points against the moulding of the fixed portion of the sash.

**EASY METHOD
OF GLAZING
WITH SPECIAL
SPRING CLIPS.**

**SMALL AMOUNT
OF PUTTY**

**DOUBLE CIRCULAR
SURFACE CONTACT
AROUND
VENTILATORS.**

**ABSOLUTELY
WEATHERPROOF**



Section Around Ventilator.

Large pivoted ventilators are possible in United Steel Sash, owing to their great strength, which is clearly demonstrated in the accompanying photograph.

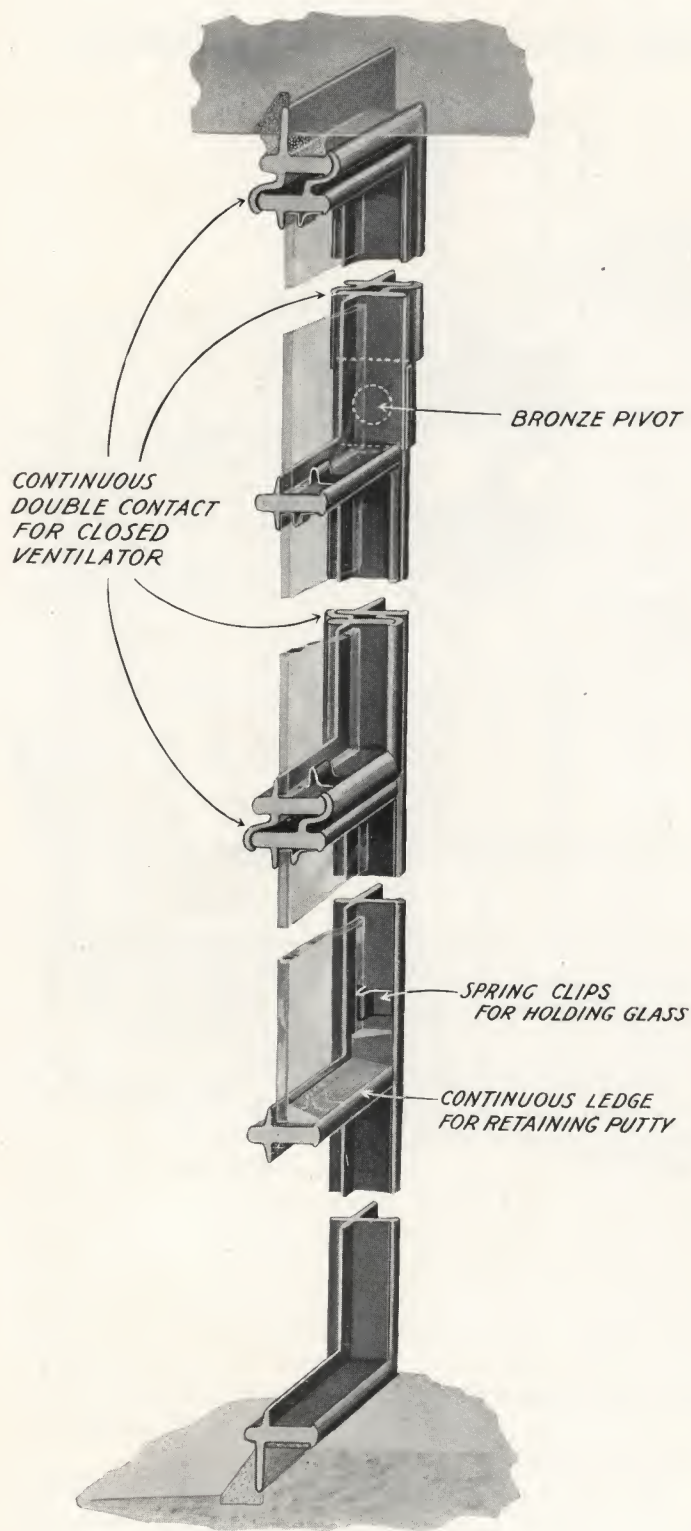
The United Steel Sash pivoted ventilators are fitted with strong, neat appearing, bronze pivots, doing away with the unsightly strap hinges.

Sketches on pages 28 to 35, inclusive, illustrate some types of United Steel Sash with pivoted ventilators. Note that the ventilators may be located at practically any place in the sash, at the top, at the bottom, or part way up from the bottom. They may be designed to extend the full width of the unit, or to leave one or two stationary lights along the sides. The only restriction is that the ventilators must not exceed 5'-0" in width or 4'-6" in height.

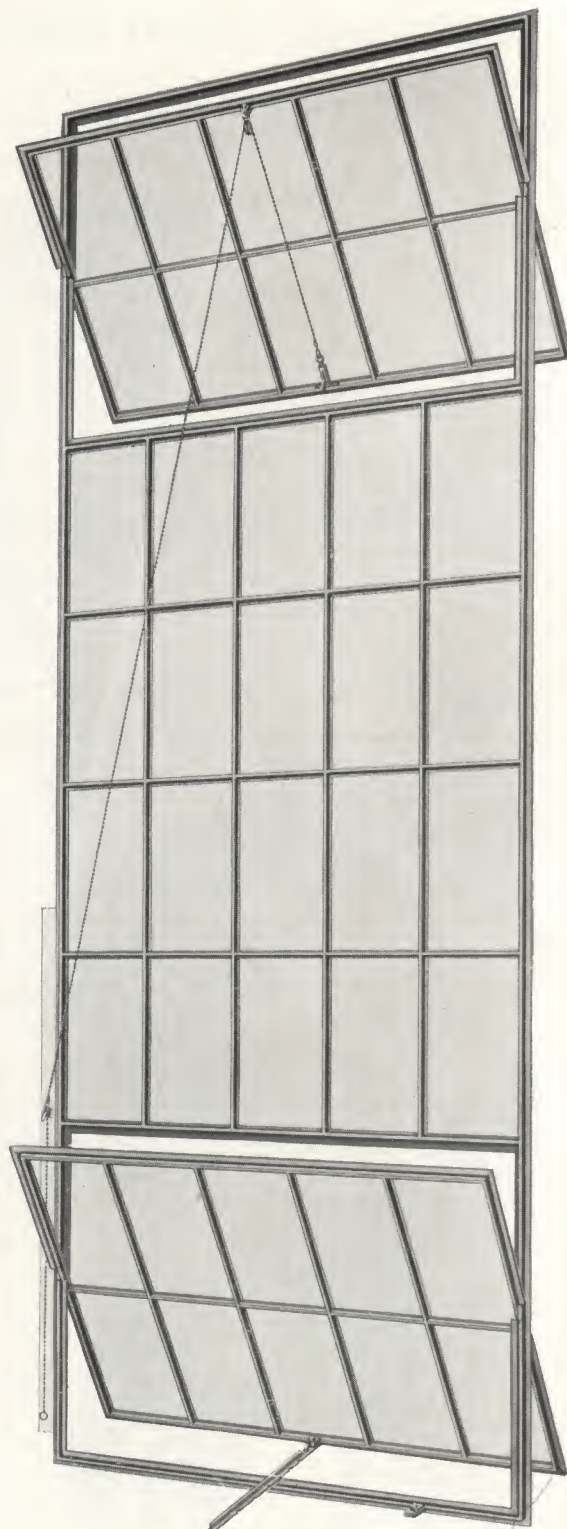
The hardware for operating this type of ventilator is of neat and attractive design, perfect in every detail. Photographs of the various types of hardware supplied with these ventilators are shown on pages 22 to 24, inclusive.



Remarkable Strength of United Steel Sash. Eight men balanced on Ventilator.



Vertical Section

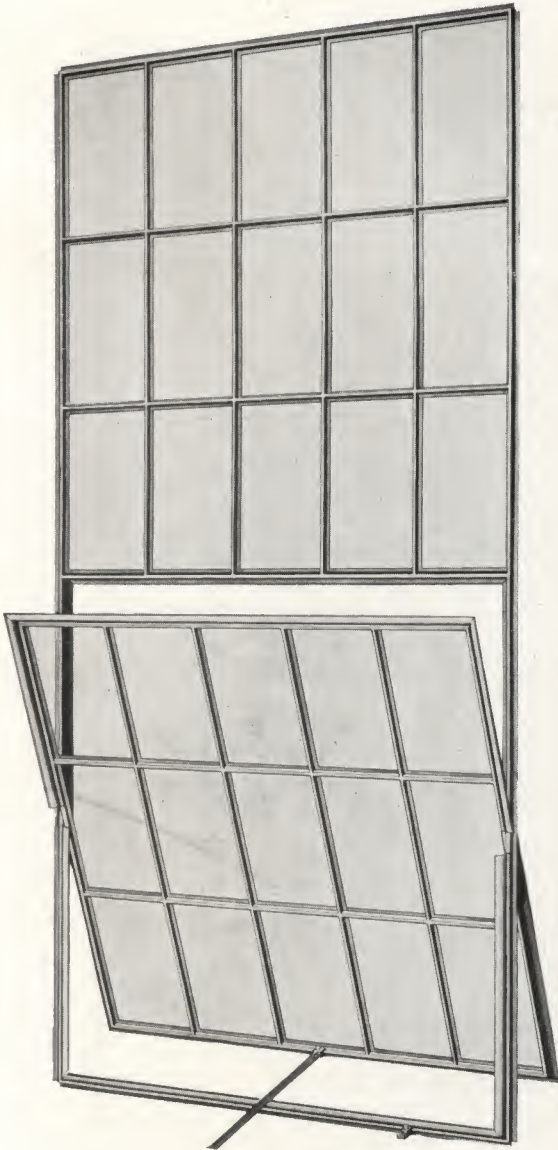


Standard Sash—C86

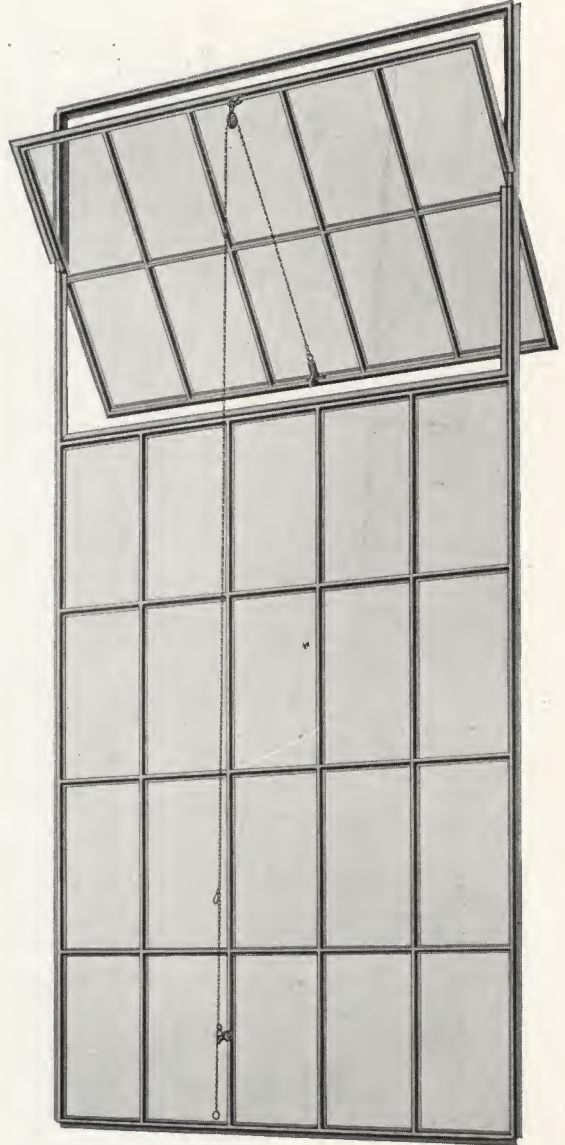
United Steel Sash

TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.

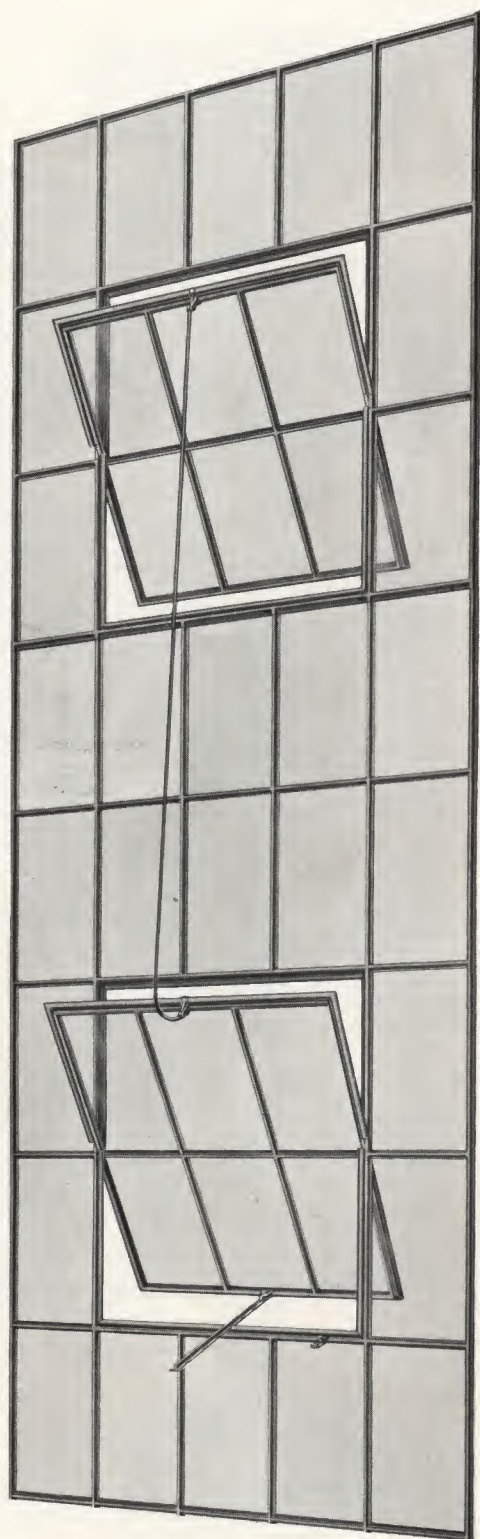


Standard Sash—C65

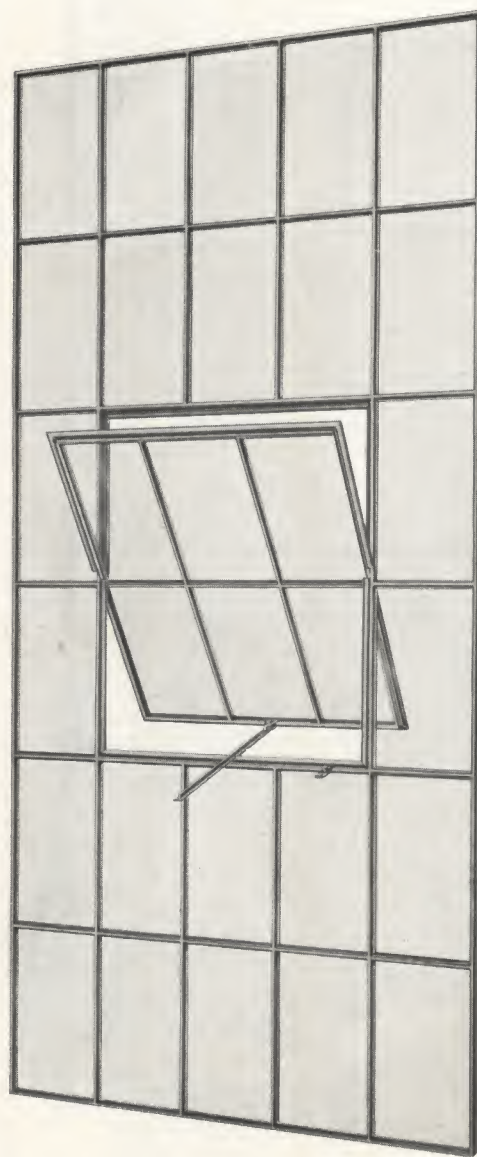


Standard Sash—C62

United Steel Sash
With Full Width Ventilators.



Standard Sash C818

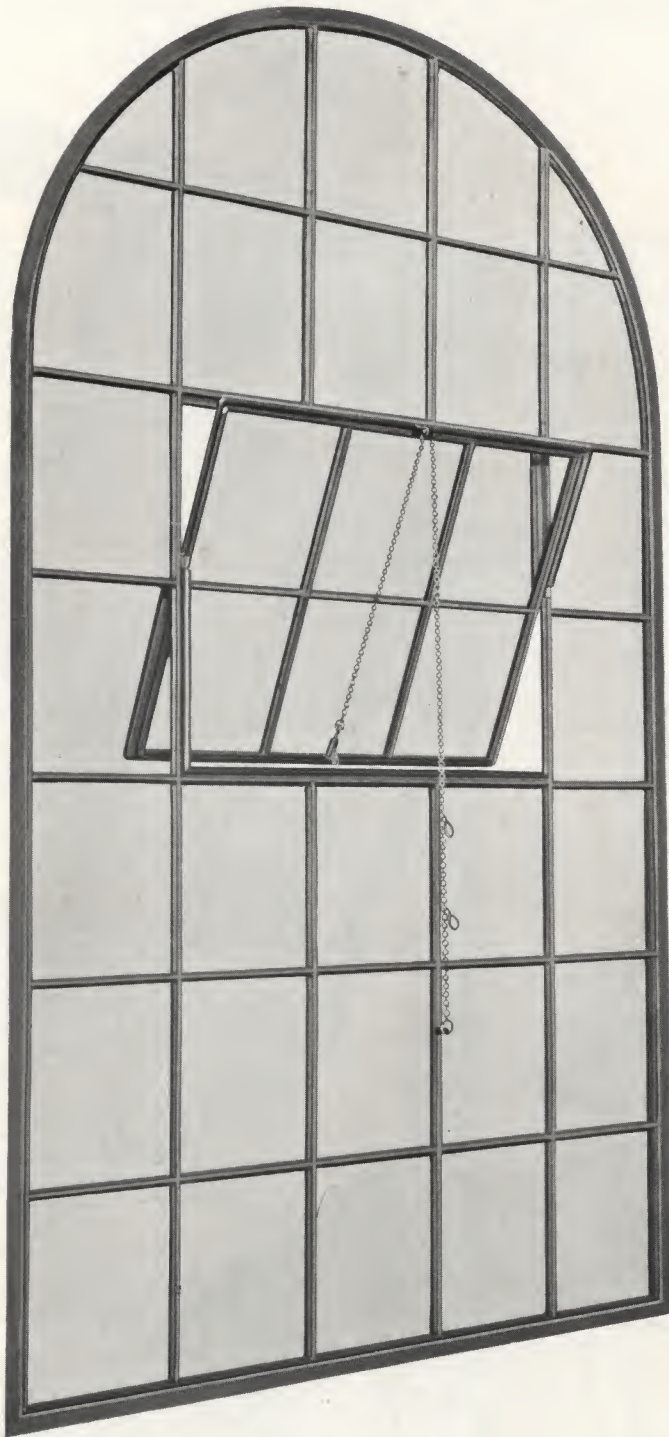


Standard Sash C615

United Steel Sash With Interior Ventilators.

TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.

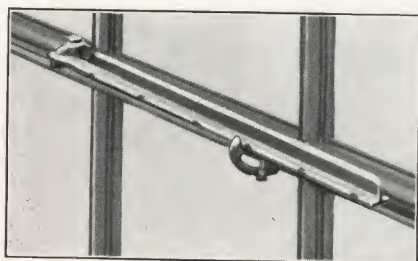


Special United Steel Sash With Semi-circular Head.

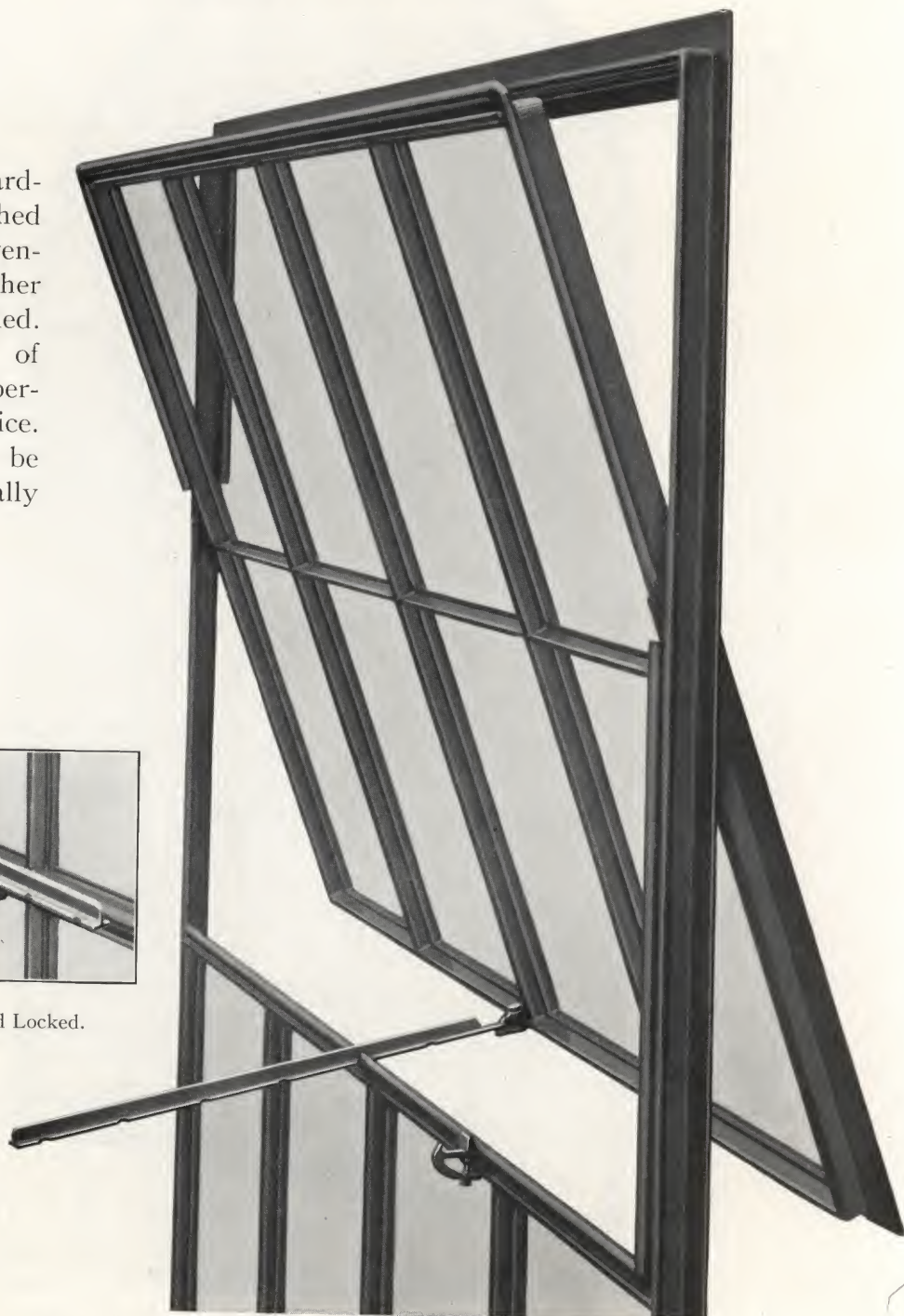
We manufacture special sash to meet all requirements.

Type E or Push Bar Hardware for Operating Pivoting Ventilators.

This type of hardware is furnished with all pivoted ventilators, unless other types are specified. Note simplicity of operation and perfect locking device. Ventilators may be opened at practically any angle.



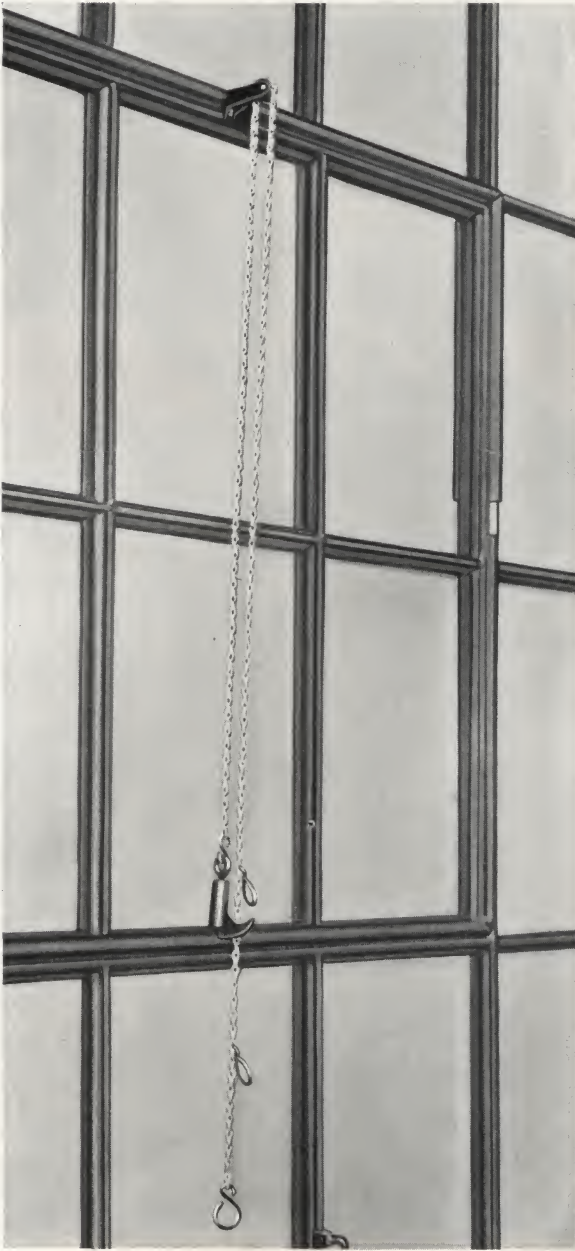
Ventilator Closed and Locked.



Ventilator Part Way Open.

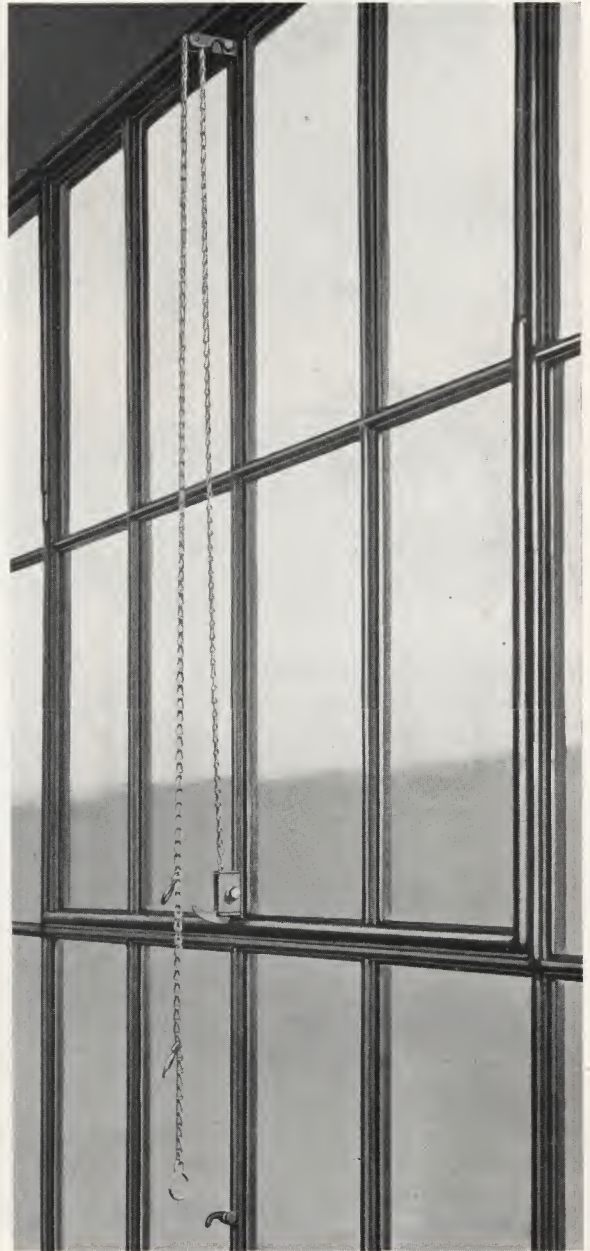
Types A and B, or Spring Latch and Chain Hardware for Operating Pivoted Ventilators

These types of Hardware are used for ventilators,
which cannot be easily reached, and are only
furnished when specified.



Type A

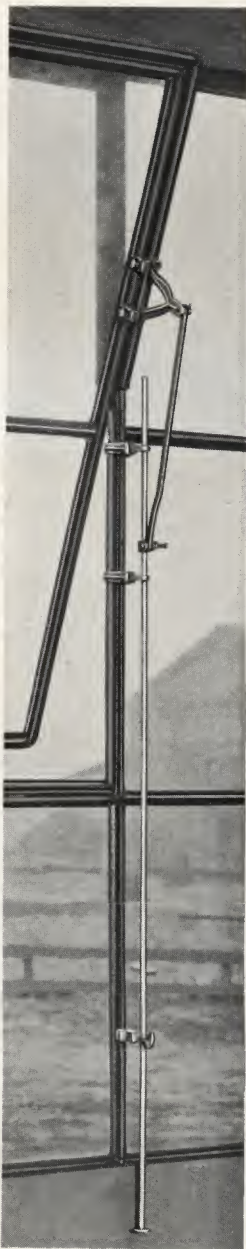
Used with Ventilators having an odd
number of lights in width.



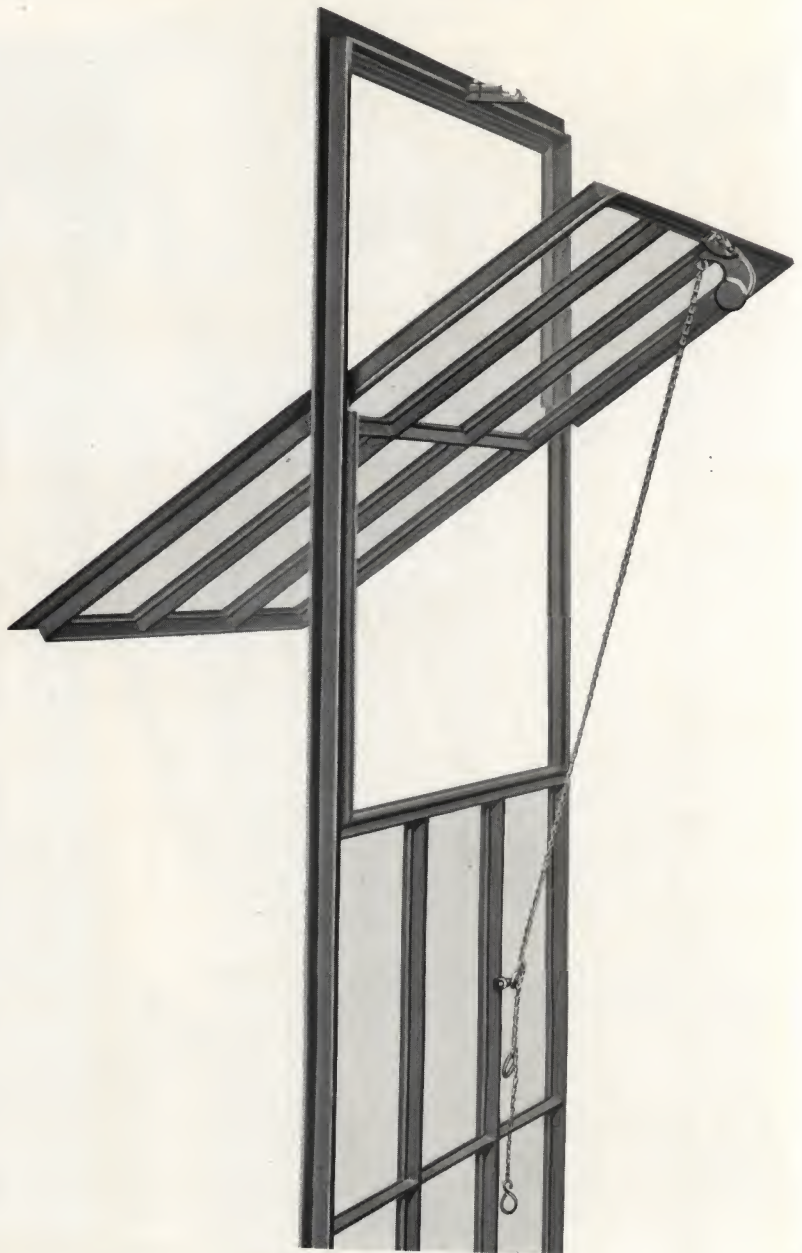
Type B.

Used with Ventilators having an even
number of lights in width.

Transom Operator
For Pivoted Ventilators.
Only furnished when specified.



Gravity Latch Operator
For Pivoted Ventilators.
Only furnished when specified.

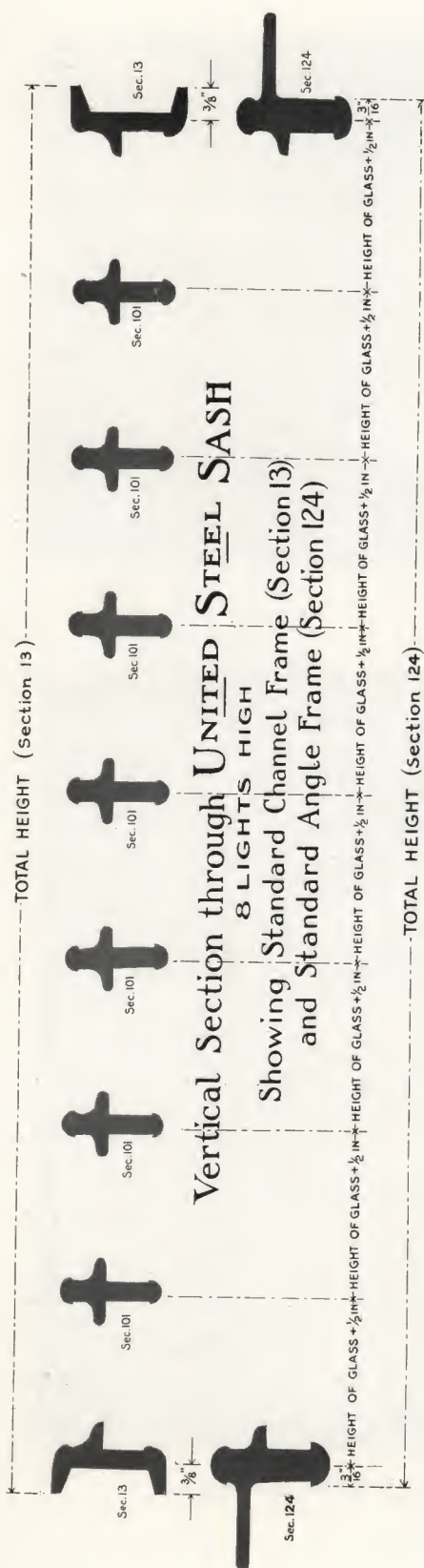


TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.



Installations of United Steel Sash With Mechanical Devices
for Operating Ventilators in Groups.



Standard Types of United Steel Sash

United Steel Sash are manufactured in standard units, 3, 4 or 5 lights in width, designated as follows:

Type A—3 lights wide.

Type B—4 lights wide.

Type C—5 lights wide.

These units are furnished in any desired number of lights in height up to 15 feet.

United Steel Sash are also manufactured in units wider than five lights with the following restrictions:

Units six to nine lights wide must not exceed 7'—9" in height (five lights of 18" glass).

Units which do not exceed 7'—4" in width (seven lights of 12" glass), can be manufactured any height up to 15 feet.

United Steel Sash are made to receive the following sizes of glass:

Width of Glass: 10, 11, 12, 13, 14 or 15 inches.

Height of Glass: 16, 17, 18, 19, 20, 21, 22, 23 or 24 inches.

By using these standard units and combining them by means of United Steel Mullions, openings of any desired width and height can be fitted.

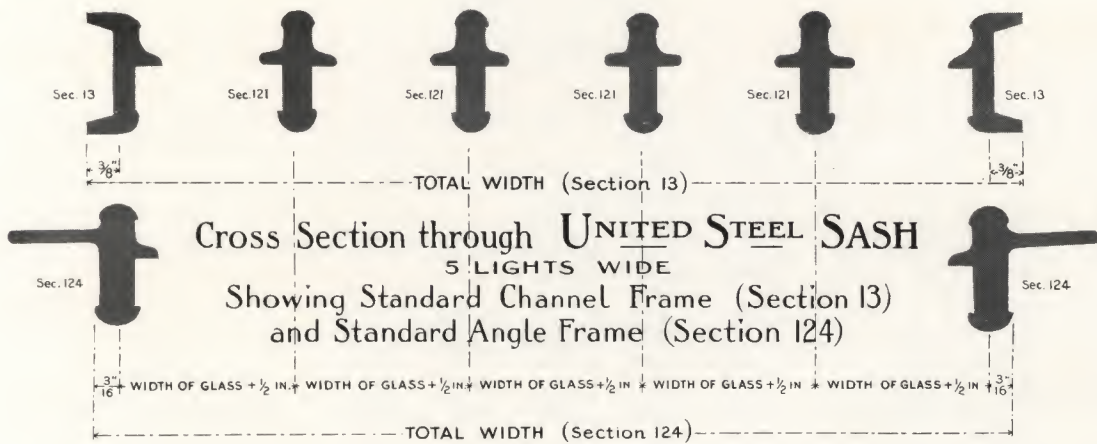
These standard types of United Steel Sash do not limit the designer in any way, but assist him to obtain the most economical and efficient results consistent with best building practice.

The cost of United Steel Sash is governed by the quantity and uniformity of sash and the amount of ventilation required. The adoption of a uniform size of window openings, permitting the use of one type of sash throughout, results in a very satisfactory and pleasing appearance for the exterior of the building, reduces the cost of manufacture and installation, and assures prompt shipments.

Special types of United Steel Sash can be supplied to meet every requirement. We offer the services of our Engineering Department, for the best and most economical methods of designing United Steel Sash to fit all conditions.

TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.



Tables for width of window openings, which can be fitted with single units of United Steel Sash, are given on pages 29, 31 and 33.

By referring to the horizontal cross section above, it will be noted that the width of any United Steel Sash Unit may be obtained from the following formula:

$$n \left(\frac{1}{2}'' + w \right) + \frac{3}{4}'' \text{ (for sash with No. 13 outside section) } = W.$$

$$n \left(\frac{1}{2}'' + w \right) + \frac{3}{8}'' \text{ (for sash with No. 124 outside section) } = W.$$

Where n = number of lights wide.

w = width of each light.

W = total width of sash.

Tables for widths of window openings requiring more than one unit are given on page 35.

These widths are obtained by taking the dimensions of unit sashes (Tables 2 and 3, pages 29, 31 and 33), and adding 3/16 in. for each mullion used.

Variations in the widths of the window openings given on page 35 may be obtained by the use of United Steel Expandable Mullions, Types C, D and E. The mullion distance for Types C and D should not be less than 3'' and the mullion distance for Type E should not be less than 3/4''.

Tables on pages 28 to 35 give width only. Tables for heights are given on page 36. The height of any United Steel Sash Unit may be obtained from the following formula:

$$n \left(\frac{1}{2}'' + h \right) + \frac{3}{4}'' \text{ (for sash with No. 13 outside section) } = H.$$

$$n \left(\frac{1}{2}'' + h \right) + \frac{3}{8}'' \text{ (for sash with No. 124 outside section) } = H.$$

Where n = number of lights high.

h = height of each light.

H = total height of sash.

This is clearly shown on the vertical cross section on the opposite page.

Standard Types of United Steel Sash

Type "A" Sash

3 Lights Wide

						<p>NOTE:—All Type A Sash using the same width of glass and having the same outside sections have the same widths. See Page 29 for tables of widths; Page 36 for tables of heights.</p>						
A21	A22	A31	A32	A33	A34							
A41	A42	A43	A44	A45	A46	A48						
A51	A52	A53	A54	A55	A56	A58	A59	A510				
A61	A62	A63	A64	A65	A66	A67	A68	A69	A610	A611	A612	
A71	A72	A73	A74	A75	A76	A77	A78	A79	A710	A711	A712	
A81	A82	A83	A84	A85	A86	A87	A88	A89	A810	A811	A812	A813
A91	A92	A93	A94	A95	A96	A97	A98	A99	A910	A911	A912	A913
A101	A102	A103	A104	A105	A106	A107	A108	A109	A1010	A1011	A1012	A1013

NOTE:—Ventilators are denoted by cross dash lines. Ventilators must not exceed 5 feet in width (5 lights wide of 12-inch glass,) nor $4\frac{1}{2}$ feet in height (3 lights high of 18-inch glass.)

Standard Types of United Steel Sash

Type "A" Sash

3 Lights Wide.

Table No. 1

Widths of Sash with No. 124 Section at Jambs

Type	WIDTH OF GLASS					
	10"	11"	12"	13"	14"	15"
A	2'-7 $\frac{7}{8}$ "	2'-10 $\frac{7}{8}$ "	3'-1 $\frac{7}{8}$ "	3'-4 $\frac{7}{8}$ "	3'-7 $\frac{7}{8}$ "	3'-10 $\frac{7}{8}$ "

Dimensions from Table No 1

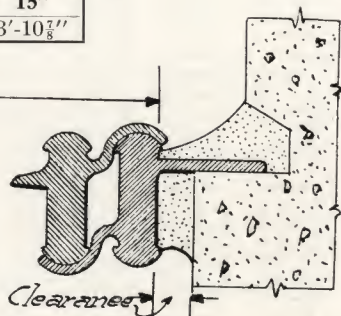
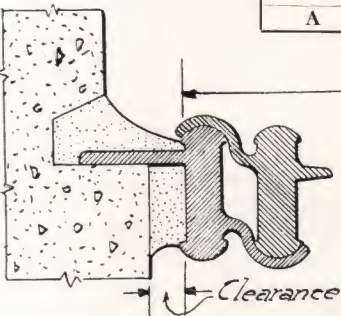


Table No. 2

Widths Between Mullions with No. 13 Section

Type	WIDTH OF GLASS					
	10"	11"	12"	13"	14"	15"
A	2'-8 $\frac{1}{4}$ "	2'-11 $\frac{1}{4}$ "	3'-2 $\frac{1}{4}$ "	3'-5 $\frac{1}{4}$ "	3'-8 $\frac{1}{4}$ "	3'-11 $\frac{1}{4}$ "

Dimensions from Table No 2.

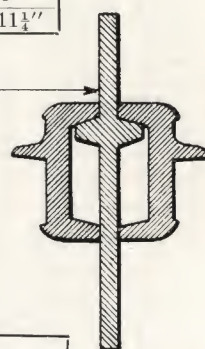
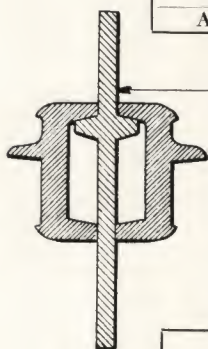
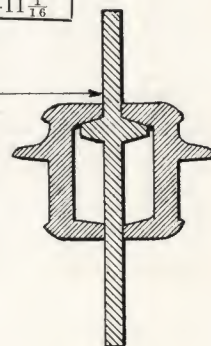
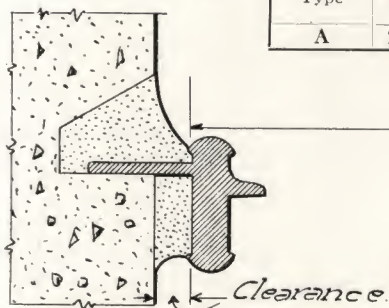


Table No. 3

Widths of Sash with No. 124 Section at Jamb and No. 13 Section at Mullion

Type	WIDTH OF GLASS					
	10"	11"	12"	13"	14"	15"
A	2'-8 $\frac{1}{16}$ "	2'-11 $\frac{1}{16}$ "	3'-2 $\frac{1}{16}$ "	3'-5 $\frac{1}{16}$ "	3'-8 $\frac{1}{16}$ "	3'-11 $\frac{1}{16}$ "

Dimensions from Table No 3.



NOTE:—Ample clearance must be allowed at Jamb to take up all inaccuracies of construction. In addition to this allowance, at least $\frac{1}{4}$ " must be allowed where ventilation extends to the jambs, so that the ventilator will operate freely.

Standard Types of United Steel Sash

Type B Sash

4 Lights Wide

NOTE:—All Type B Sash using the same width of glass and having the same outside sections have the same width. See page 31, for tables of widths; page 36, for tables of heights.

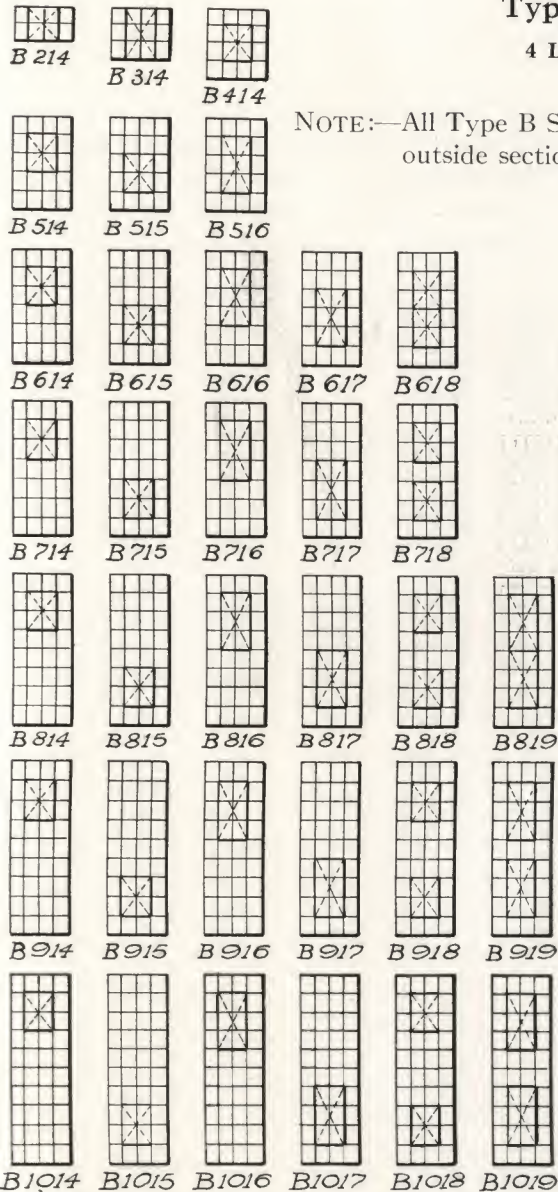
B 21	B 22	B 31	B 32	B 33	B 34													
B 41	B 42	B 43	B 44	B 45	B 46	B 48												
B 51	B 52	B 53	B 54	B 55	B 56	B 58	B 59	B 510										
B 61	B 62	B 63	B 64	B 65	B 66	B 67	B 68	B 69	B 610	B 611	B 612							
B 71	B 72	B 73	B 74	B 75	B 76	B 77	B 78	B 79	B 710	B 711	B 712							
B 81	B 82	B 83	B 84	B 85	B 86	B 87	B 88	B 89	B 810	B 811	B 812	B 813						
B 91	B 92	B 93	B 94	B 95	B 96	B 97	B 98	B 99	B 910	B 911	B 912	B 913						
B 101	B 102	B 103	B 104	B 105	B 106	B 107	B 108	B 109	B 1010	B 1011	B 1012	B 1013						

NOTE:—Ventilators are denoted by cross dashed lines. Ventilators must not exceed 5 feet in width (5 lights wide of 12-inch glass,) nor $4\frac{1}{2}$ feet in height (3 lights in height of 18-inch glass.)

Standard Types of United Steel Sash

Type B Sash

4 Lights Wide



NOTE:—All Type B Sash using the same width of glass and having the same outside sections have the same width. For heights see page 36.

Table No. 1

Widths of Sash with No. 124 Section

Type	WIDTH OF GLASS					
	10"	11"	12"	13"	14"	15"
B	3'-6 $\frac{3}{8}$ "	3'-10 $\frac{3}{8}$ "	4'-2 $\frac{3}{8}$ "	4'-6 $\frac{3}{8}$ "	4'-10 $\frac{3}{8}$ "	5'-2 $\frac{3}{8}$ "

Table No. 2

Widths between Mullions with No. 13 Section

Type	WIDTH OF GLASS					
	10"	11"	12"	13"	14"	15"
B	3'-6 $\frac{3}{4}$ "	3'-10 $\frac{3}{4}$ "	4'-2 $\frac{3}{4}$ "	4'-6 $\frac{3}{4}$ "	4'-10 $\frac{3}{4}$ "	5'-2 $\frac{3}{4}$ "

Table No. 3

Widths of Sash with No. 124 Section at Jamb and No. 13 Section at Mullion

Type	WIDTH OF GLASS					
	10"	11"	12"	13"	14"	15"
B	3'-6 $\frac{9}{16}$ "	3'-10 $\frac{9}{16}$ "	4'-2 $\frac{9}{16}$ "	4'-6 $\frac{9}{16}$ "	4'-10 $\frac{9}{16}$ "	5'-2 $\frac{9}{16}$ "

NOTE:—Ventilators are denoted by cross dashed lines. Ventilators must not exceed 5 ft. in width (5 lights wide of 12" glass) nor 4 $\frac{1}{2}$ ft. in height (3 lights high of 18" glass).

NOTE:—Ample clearance must be allowed at jambs to take up all inaccuracies of construction. In addition to this allowance, at least $\frac{1}{4}$ " must be allowed where ventilation extends to the jambs so that ventilators will operate freely.

Standard Types of United Steel Sash

Type C Sash

5 Lights Wide

NOTE:—All Type C Sash using the same width of glass and having the same outside sections have the same widths. See page 33 for tables of widths; page 36 for tables of heights.

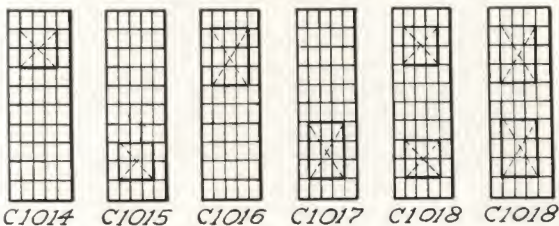
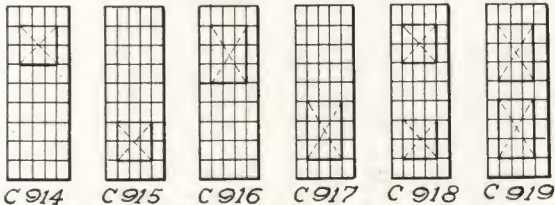
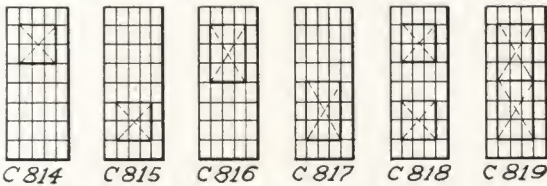
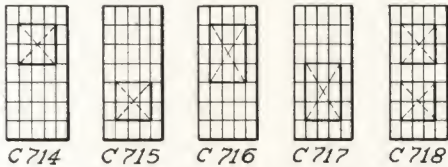
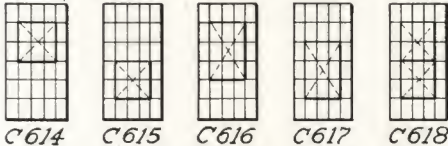
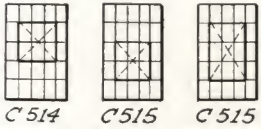
C21	C22	C31	C32	C33	C34														
C41	C42	C43	C44	C45	C46	C48													
C51	C52	C53	C54	C55	C56	C58	C59	C510											
C61	C62	C63	C64	C65	C66	C67	C68	C69	C610	C611	C612								
C71	C72	C73	C74	C75	C76	C77	C78	C79	C710	C711	C712								
C81	C82	C83	C84	C85	C86	C87	C88	C89	C810	C811	C812	C813							
C91	C92	C93	C94	C95	C96	C97	C98	C99	C910	C911	C912	C913							
C101	C102	C103	C104	C105	C106	C107	C108	C109	C1010	C1011	C1012	C1013							

NOTE:—Ventilators are denoted by cross dashed lines. Ventilators must not exceed 5 ft. in width (5 lights wide of 12" glass) nor 4½ ft. in height (3 lights high of 18" glass).

Standard Types of United Steel Sash

Type C Sash

5 Lights Wide



NOTE:—All Type C Sash using the same width of glass and having the same outside sections have the same width. For heights, see page 36.

Table No. 1

Widths of Sash with No. 124 Section

Type	WIDTH OF GLASS					
	10"	11"	12"	13"	14"	15"
C	4'-4 $\frac{7}{8}$ "	4'-9 $\frac{7}{8}$ "	5'-2 $\frac{7}{8}$ "	5'-7 $\frac{7}{8}$ "	6'-0 $\frac{7}{8}$ "	6'-5 $\frac{7}{8}$ "

Table No. 2

Widths between Mullion with No. 13 Section

Type	WIDTH OF GLASS					
	10"	11"	12"	13"	14"	15"
C	4'-5 $\frac{1}{4}$ "	4'-10 $\frac{1}{4}$ "	5'-3 $\frac{1}{4}$ "	5'-8 $\frac{1}{8}$ "	6'-1 $\frac{1}{4}$ "	6'-6 $\frac{1}{4}$ "

Table No. 3

Widths of Sash with No. 124 Section at Jamb and No. 13 Section at Mullion

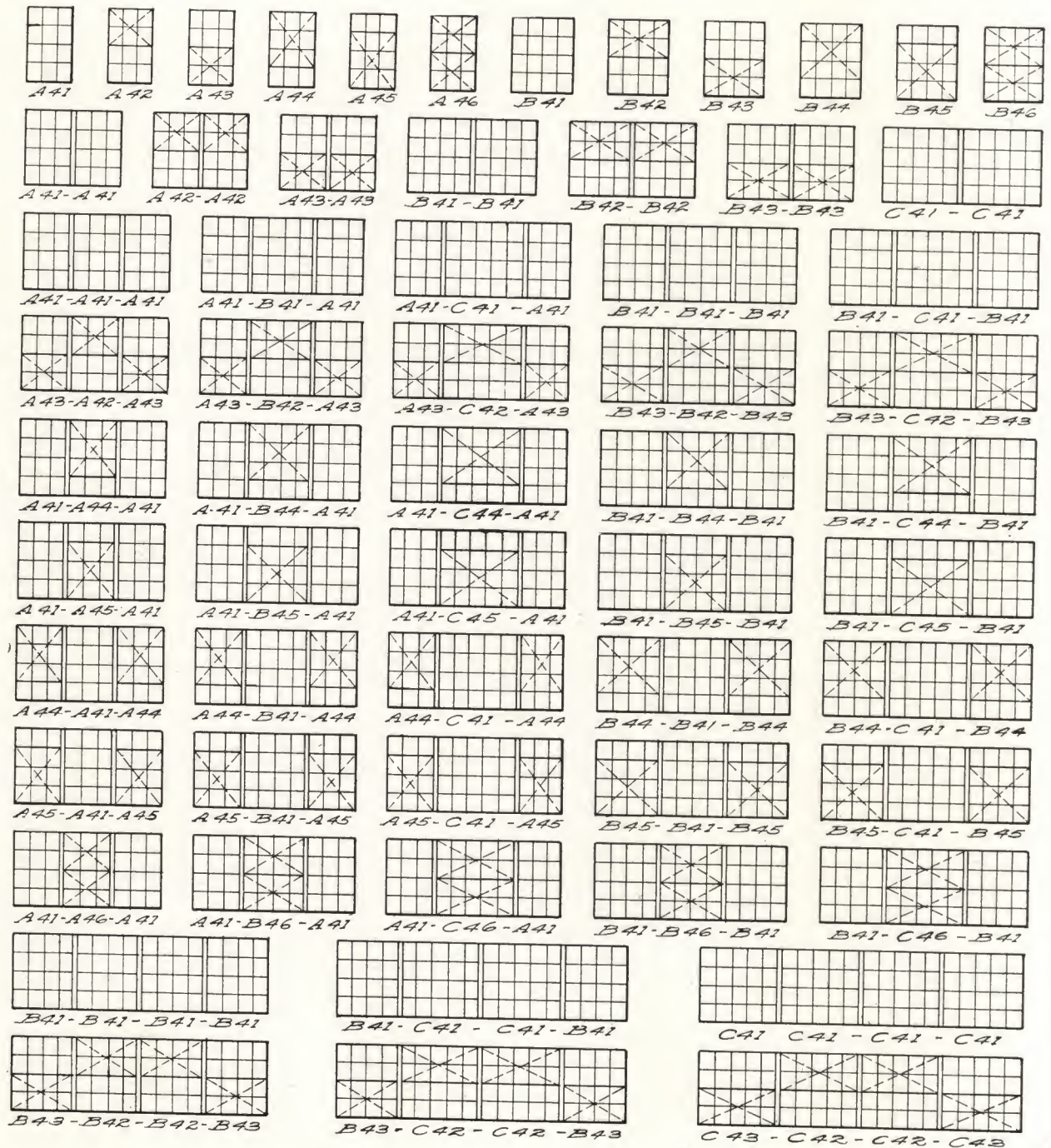
Type	WIDTH OF GLASS					
	10"	11"	12"	13"	14"	15"
C	4'-5 $\frac{1}{16}$ "	4'-10 $\frac{1}{16}$ "	5'-3 $\frac{1}{16}$ "	5'-8 $\frac{1}{16}$ "	6'-1 $\frac{1}{16}$ "	6'-6 $\frac{1}{16}$ "

NOTE:—Ventilators are denoted by cross dashed lines. Ventilators must not exceed 5 ft. in width (5 lights wide of 12" glass) nor 4 $\frac{1}{2}$ ft. in height (3 lights high of 18" glass).

NOTE:—Ample clearance must be allowed at jamb to take up all inaccuracies of construction. In addition to this allowance, at least $\frac{1}{4}$ " must be allowed where ventilation extends to the jambs so that ventilators will operate freely.

Combinations of Units of United Steel Sash

Giving arrangement of Ventilation and Overall Dimensions



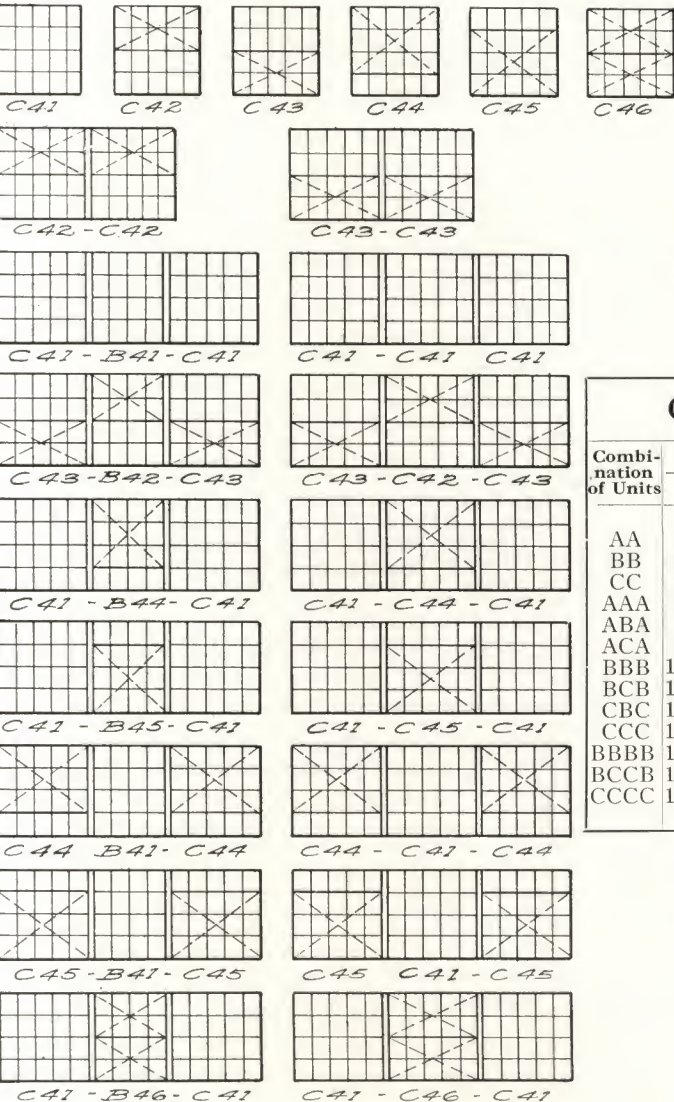
NOTE:—Ventilators are denoted by cross dashed lines. Ventilators must not exceed 5 ft. in width (5 lights wide of 12" glass) nor 4½ ft. in height (3 lights high of 18" glass).

TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.

Combinations of Units of United Steel Sash

Giving Arrangement of Ventilation and Overall Dimensions



NOTE:—Other arrangements of ventilation may be obtained by combining units on pages 28 to 33 as desired.

For Table of Heights see Page 36

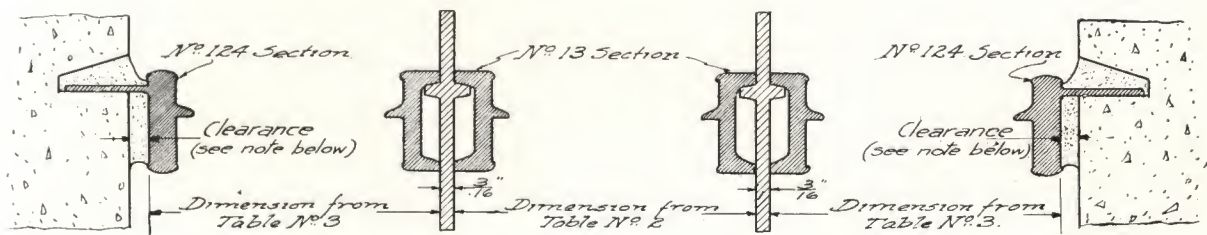
NOTE:—Combinations having the same arrangement of letters (disregarding numerals) have the same dimensions.

Overall Widths of Combinations

Combination of Units	WIDTH OF GLASS					
	10"	11"	12"	13"	14"	15"
AA	5'- 4 ⁵ / ₁₆ "	5'-10 ⁵ / ₁₆ "	6'- 4 ⁵ / ₁₆ "	6'-10 ⁵ / ₁₆ "	7'- 4 ⁵ / ₁₆ "	7'-10 ⁵ / ₁₆ "
BB	7'- 1 ⁵ / ₁₆ "	7'- 9 ⁵ / ₁₆ "	8'- 5 ⁵ / ₁₆ "	9'- 1 ⁵ / ₁₆ "	9'- 9 ⁵ / ₁₆ "	10'- 5 ⁵ / ₁₆ "
CC	8'-10 ⁵ / ₁₆ "	9'- 8 ⁵ / ₁₆ "	10'- 6 ⁵ / ₁₆ "	11'- 4 ⁵ / ₁₆ "	12'- 2 ⁵ / ₁₆ "	13'- 0 ⁵ / ₁₆ "
AAA	8'- 0 ³ / ₄ "	8'- 9 ³ / ₄ "	9'- 6 ³ / ₄ "	10'- 3 ³ / ₄ "	11'- 0 ³ / ₄ "	11'- 9 ³ / ₄ "
ABA	8'-11 ¹ / ₄ "	9'- 9 ¹ / ₄ "	10'- 7 ¹ / ₄ "	11'- 5 ¹ / ₄ "	12'- 3 ¹ / ₄ "	13'- 1 ¹ / ₄ "
ACA	9'- 9 ³ / ₄ "	10'- 8 ³ / ₄ "	11'- 7 ³ / ₄ "	12'- 6 ³ / ₄ "	13'- 5 ³ / ₄ "	14'- 4 ³ / ₄ "
BBB	10'- 8 ¹ / ₄ "	11'- 8 ¹ / ₄ "	12'- 8 ¹ / ₄ "	13'- 8 ¹ / ₄ "	14'- 8 ¹ / ₄ "	15'- 8 ¹ / ₄ "
BCB	11'- 6 ³ / ₄ "	12'- 7 ³ / ₄ "	13'- 8 ³ / ₄ "	14'- 9 ³ / ₄ "	15'-10 ³ / ₄ "	16'-11 ³ / ₄ "
CBC	12'- 5 ¹ / ₄ "	13'- 7 ¹ / ₄ "	14'- 9 ¹ / ₄ "	15'-11 ¹ / ₄ "	17'- 1 ¹ / ₄ "	18'- 3 ¹ / ₄ "
CCC	13'- 3 ³ / ₄ "	14'- 6 ³ / ₄ "	15'- 9 ³ / ₄ "	17'- 0 ³ / ₄ "	18'- 3 ³ / ₄ "	19'- 6 ³ / ₄ "
BBBB	14'- 3 ³ / ₄ "	15'- 7 ³ / ₄ "	16'-11 ³ / ₄ "	18'- 3 ³ / ₄ "	19'- 7 ³ / ₄ "	20'-11 ³ / ₄ "
BCCB	16'- 0 ³ / ₄ "	17'- 6 ³ / ₄ "	19'- 0 ³ / ₄ "	20'- 6 ³ / ₄ "	22'- 0 ³ / ₄ "	23'- 6 ³ / ₄ "
CCCC	17'- 9 ³ / ₄ "	19'- 5 ³ / ₄ "	21'- 1 ³ / ₄ "	22'- 9 ³ / ₄ "	24'- 5 ³ / ₄ "	26'- 1 ³ / ₄ "

NOTE:—Ventilators must not exceed 5 ft. in width (5 lights wide of 12" glass) nor 4½ ft. in height (3 lights high of 18" glass).

Ventilators are denoted by cross dashed lines.

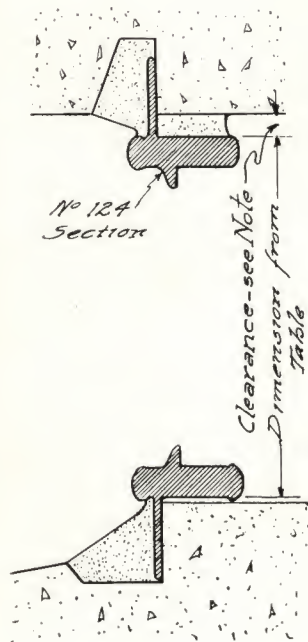


NOTE:—Ample clearance must be allowed at jambs to take up all inaccuracies of construction. In addition to this allowance, at least ¼" must be allowed where ventilation extends to the jambs so that the ventilators will operate freely.

Tables of Heights of United Steel Sash

For Tables of Widths see Pages 29 to 35.

NOTE:—Openings requiring more than one unit in height can be filled by using Type B mullions shown on page 14 in combination with units of United Steel Sash.



Tables of Heights With No. 124 Sections										
No. of Lights High	HEIGHT OF GLASS								No. of Lights High	
	16"	17"	18"	19"	20"	21"	22"	23"		24"
1	1'- 4 1/2"	1'- 5 7/8"	1'- 6 1/4"	1'- 7 1/8"	1'- 8 1/4"	1'- 9 1/8"	1'-10 7/8"	1'-11 1/4"	2'- 0 1/4"	1
2	2'- 9 1/2"	2'-11 1/8"	3'- 1 1/4"	3'- 3 1/8"	3'- 5 1/4"	3'- 7 1/8"	3'- 9 1/8"	3'-11 1/4"	4'- 1 1/4"	2
3	4'- 1 1/2"	4'- 4 1/8"	4'- 7 1/4"	4'-10 1/8"	5'- 1 1/4"	5'- 4 1/8"	5'- 7 1/8"	5'-10 1/4"	6'- 1 1/4"	3
4	5'- 6 1/2"	5'-10 1/8"	6'- 2 1/4"	6'- 6 1/8"	6'-10 1/4"	7'- 2 1/8"	7'- 6 1/8"	7'-10 1/4"	8'- 2 1/4"	4
5	6'-10 1/2"	7'- 3 1/8"	7'- 8 1/4"	8'- 1 1/8"	8'- 6 1/4"	8'-11 1/8"	9'- 4 1/8"	9'- 9 1/4"	10'- 2 1/4"	5
6	8'- 3 1/2"	8'- 9 1/8"	9'- 3 1/4"	9'- 9 1/8"	10'- 3 1/4"	10'- 9 1/8"	11'- 3 1/8"	11'- 9 1/4"	12'- 3 1/4"	6
7	9'- 7 1/2"	10'- 2 1/8"	10'- 9 1/4"	11'- 4 1/8"	11'-11 1/8"	12'- 6 1/4"	13'- 1 1/8"	13'- 8 1/4"	14'- 3 1/4"	7
8	11'- 0 1/2"	11'- 8 1/8"	12'- 4 1/4"	13'- 0 1/8"	13'- 8 1/4"	14'- 4 1/8"	15'- 0 1/8"	15'- 8 1/4"	.....	8
9	12'- 4 1/2"	13'- 1 1/8"	13'-10 1/4"	14'- 7 1/8"	15'- 4 1/4"	.....	.....	.....	.....	9
10	13'- 9 1/2"	14'- 7 1/8"	15'- 5 1/4"	.....	.....	.....	.....	.....	.....	10

NOTE:—Ample clearance must be allowed at lintel to take up all inaccuracies of construction. In addition to this allowance, at least 1/4" must be allowed where ventilation extends to the lintel so that the ventilators will operate freely.



Table of Heights With No. 13 Sections										
No. of Lights High	HEIGHT OF GLASS								No. of Lights High	
	16"	17"	18"	19"	20"	21"	22"	23"		24"
1	1'- 5 $\frac{1}{4}$ "	1'- 6 $\frac{1}{4}$ "	1'- 7 $\frac{1}{4}$ "	1'- 8 $\frac{1}{4}$ "	1'- 9 $\frac{1}{4}$ "	1'-10 $\frac{1}{4}$ "	1'-11 $\frac{1}{4}$ "	2'- 0 $\frac{1}{4}$ "	2'- 1 $\frac{1}{4}$ "	1
2	2'- 9 $\frac{3}{4}$ "	2'-11 $\frac{3}{4}$ "	3'- 1 $\frac{3}{4}$ "	3'- 3 $\frac{3}{4}$ "	3'- 5 $\frac{3}{4}$ "	3'- 7 $\frac{3}{4}$ "	3'- 9 $\frac{3}{4}$ "	3'-11 $\frac{3}{4}$ "	4'- 1 $\frac{3}{4}$ "	2
3	4'- 2 $\frac{3}{4}$ "	4'- 5 $\frac{3}{4}$ "	4'- 8 $\frac{3}{4}$ "	4'-11 $\frac{3}{4}$ "	5'- 2 $\frac{3}{4}$ "	5'- 5 $\frac{3}{4}$ "	5'- 8 $\frac{3}{4}$ "	5'-11 $\frac{3}{4}$ "	6'- 2 $\frac{3}{4}$ "	3
4	5'- 6 $\frac{3}{4}$ "	5'-10 $\frac{3}{4}$ "	6'- 2 $\frac{3}{4}$ "	6'- 6 $\frac{3}{4}$ "	6'-10 $\frac{3}{4}$ "	7'- 2 $\frac{3}{4}$ "	7'- 6 $\frac{3}{4}$ "	7'-10 $\frac{3}{4}$ "	8'- 2 $\frac{3}{4}$ "	4
5	6'-11 $\frac{3}{4}$ "	7'- 4 $\frac{3}{4}$ "	7'- 9 $\frac{3}{4}$ "	8'- 2 $\frac{3}{4}$ "	8'- 7 $\frac{3}{4}$ "	9'- 0 $\frac{3}{4}$ "	9'- 5 $\frac{3}{4}$ "	9'-10 $\frac{3}{4}$ "	10'- 3 $\frac{3}{4}$ "	5
6	8'- 3 $\frac{3}{4}$ "	8'- 9 $\frac{3}{4}$ "	9'- 3 $\frac{3}{4}$ "	9'- 9 $\frac{3}{4}$ "	10'- 3 $\frac{3}{4}$ "	10'- 9 $\frac{3}{4}$ "	11'- 3 $\frac{3}{4}$ "	11'- 9 $\frac{3}{4}$ "	12'- 3 $\frac{3}{4}$ "	6
7	9'- 8 $\frac{3}{4}$ "	10'- 3 $\frac{3}{4}$ "	10'-10 $\frac{3}{4}$ "	11'- 5 $\frac{3}{4}$ "	12'- 0 $\frac{3}{4}$ "	12'- 7 $\frac{3}{4}$ "	13'- 2 $\frac{3}{4}$ "	13'- 9 $\frac{3}{4}$ "	14'- 4 $\frac{3}{4}$ "	7
8	11'- 0 $\frac{3}{4}$ "	11'- 8 $\frac{3}{4}$ "	12'- 4 $\frac{3}{4}$ "	13'- 0 $\frac{3}{4}$ "	13'- 8 $\frac{3}{4}$ "	14'- 4 $\frac{3}{4}$ "	15'- 0 $\frac{3}{4}$ "	15'- 8 $\frac{3}{4}$"	.....	8
9	12'- 5 $\frac{3}{4}$ "	13'- 2 $\frac{3}{4}$ "	13'-11 $\frac{3}{4}$ "	14'- 8 $\frac{3}{4}$ "	15'- 5 $\frac{3}{4}$"	.....	.....	.....	.....	9
10	13'- 9 $\frac{3}{4}$ "	14'- 7 $\frac{3}{4}$ "	15'- 5 $\frac{3}{4}$"	.....	.....	.....	.....	.....	.....	10

Information Required with United Steel Sash Orders

The following information should be furnished with each order for United Steel Sash:

1st.—Dimensions of all masonry openings; allowable variations, if any. Outer section of sash for each opening. Furnish sketch showing connections at lintel, jamb and sill. This is important that mullions of proper length may be furnished.

2nd.—Size of glass required.

3rd.—Type of mullion required.

4th.—Number and position of ventilators required. If ventilators are other than standard pivot ventilators give full details.

5th.—The type of hardware required for each ventilator: the push-bar, transom operating device, spring latch or special gravity latch. If transom operating device or spring latch or gravity latch are required, state the sill height, that proper length of rod or chain may be supplied. State whether fusible links are required. If mechanical operator is to be used, state the type and the number of arms provided for each ventilator.

6th.—Whether inside or outside glazing is required.

Inside glazing is standard and will be provided in all cases unless otherwise ordered.

If outside glazing is required, state whether leg of No. 124 or No. 128 section is to be regular or reversed.

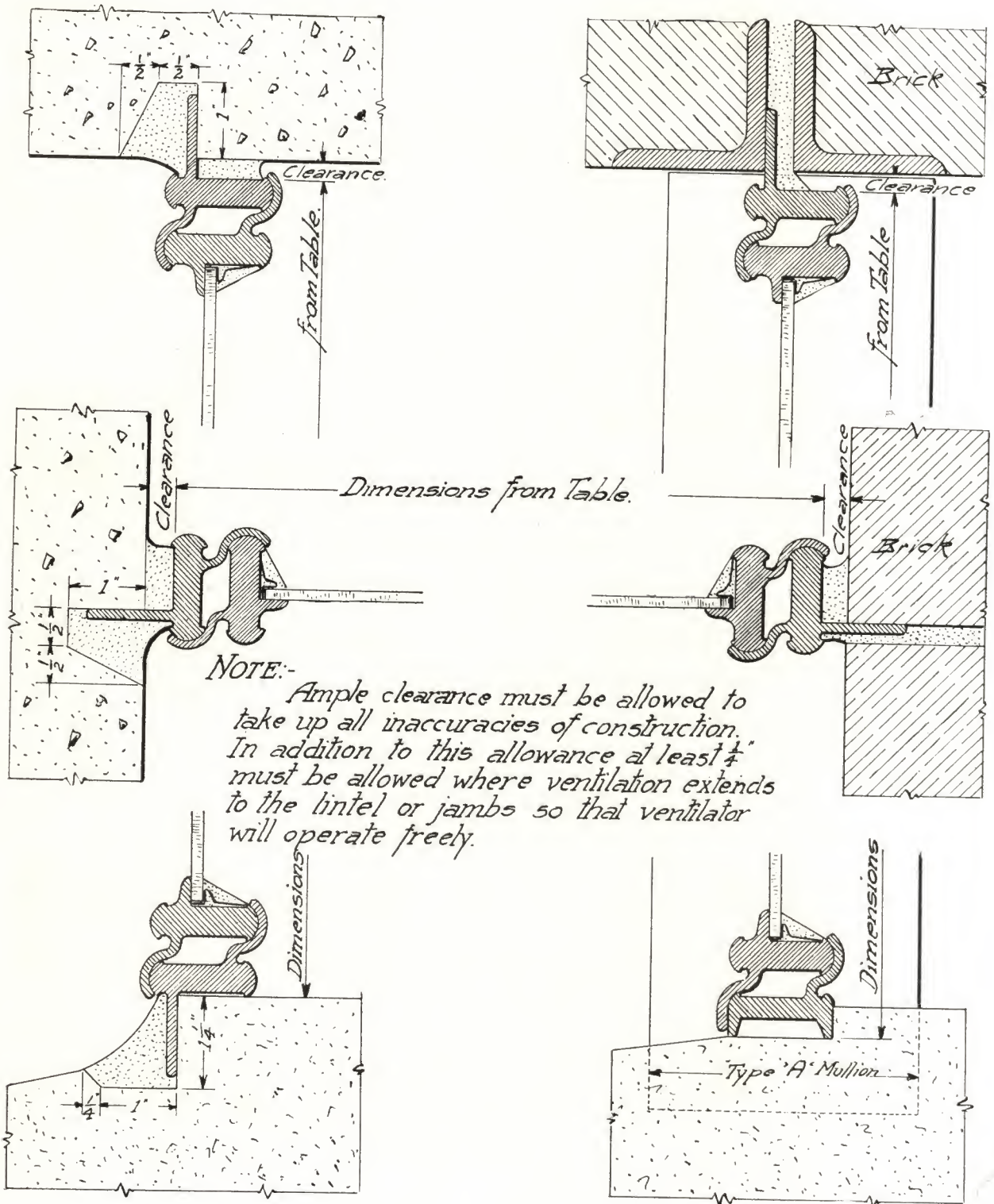
7th.—The thickness of glass to be used that proper clips may be furnished.

8th.—If hook bolts or sash clamps are required for attaching sash to structural steel, state the number required. $1'' \times \frac{5}{16}''$ carriage bolts are furnished with sash clamps.

9th.—Give full shipping directions, the name of consignee, by which railroad and at which station delivery should be made, the date on which shipment is required; also give explicit billing directions.

10th.—State the name of owner or the name of building for which sash is required.

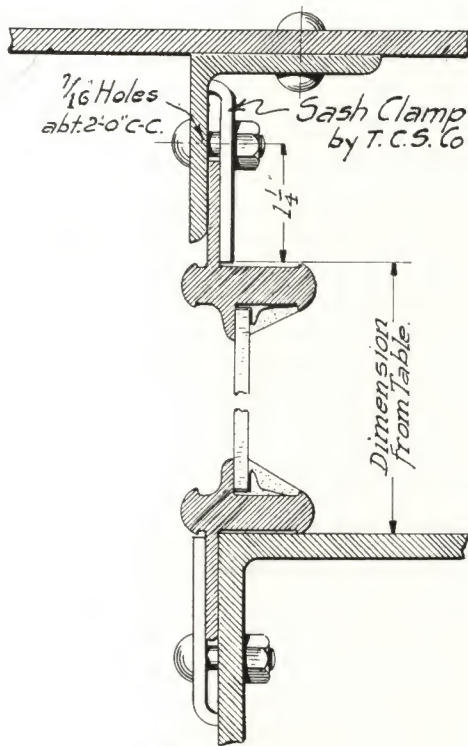
11th.—Give name of architect or engineer.



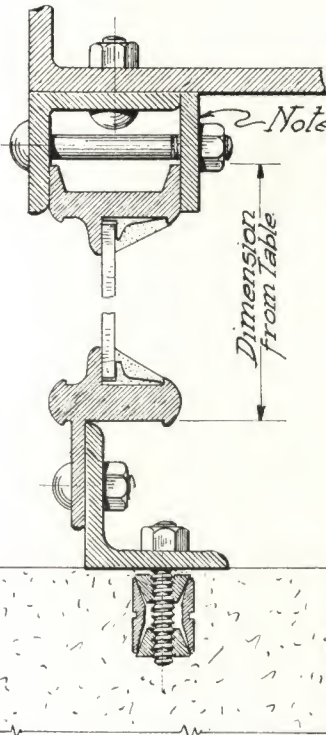
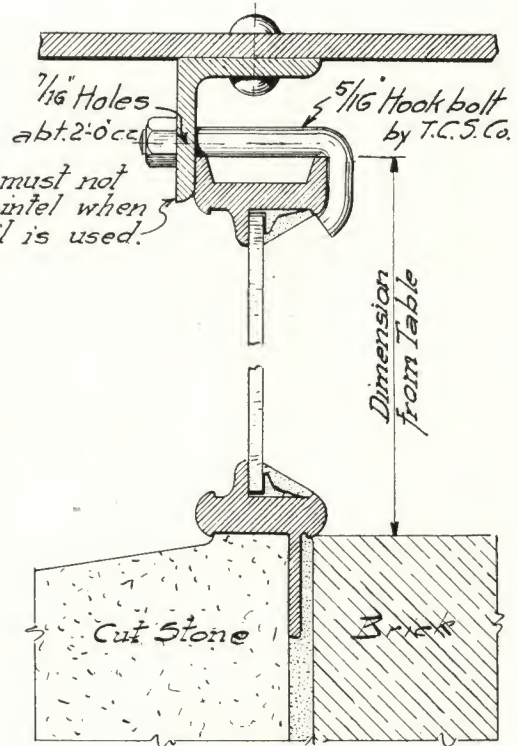
Details Showing Standard Connections of United Steel Sash to Masonry

TRUSSED CONCRETE STEEL CO.

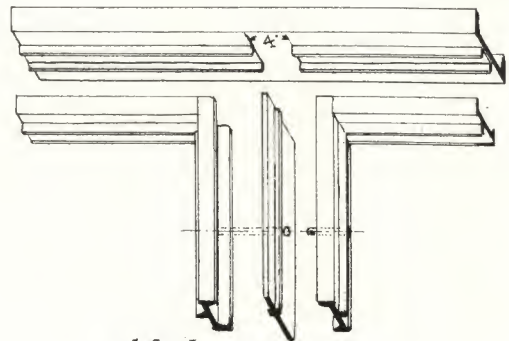
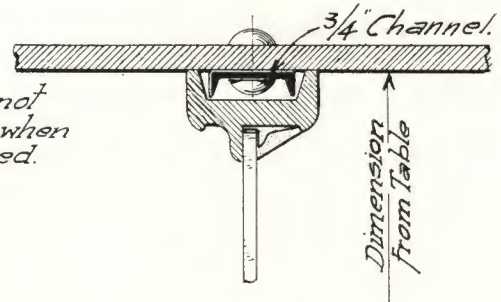
DETROIT, MICH., U. S. A.



Note:- Ventilator must not extend to Lintel when this detail is used.



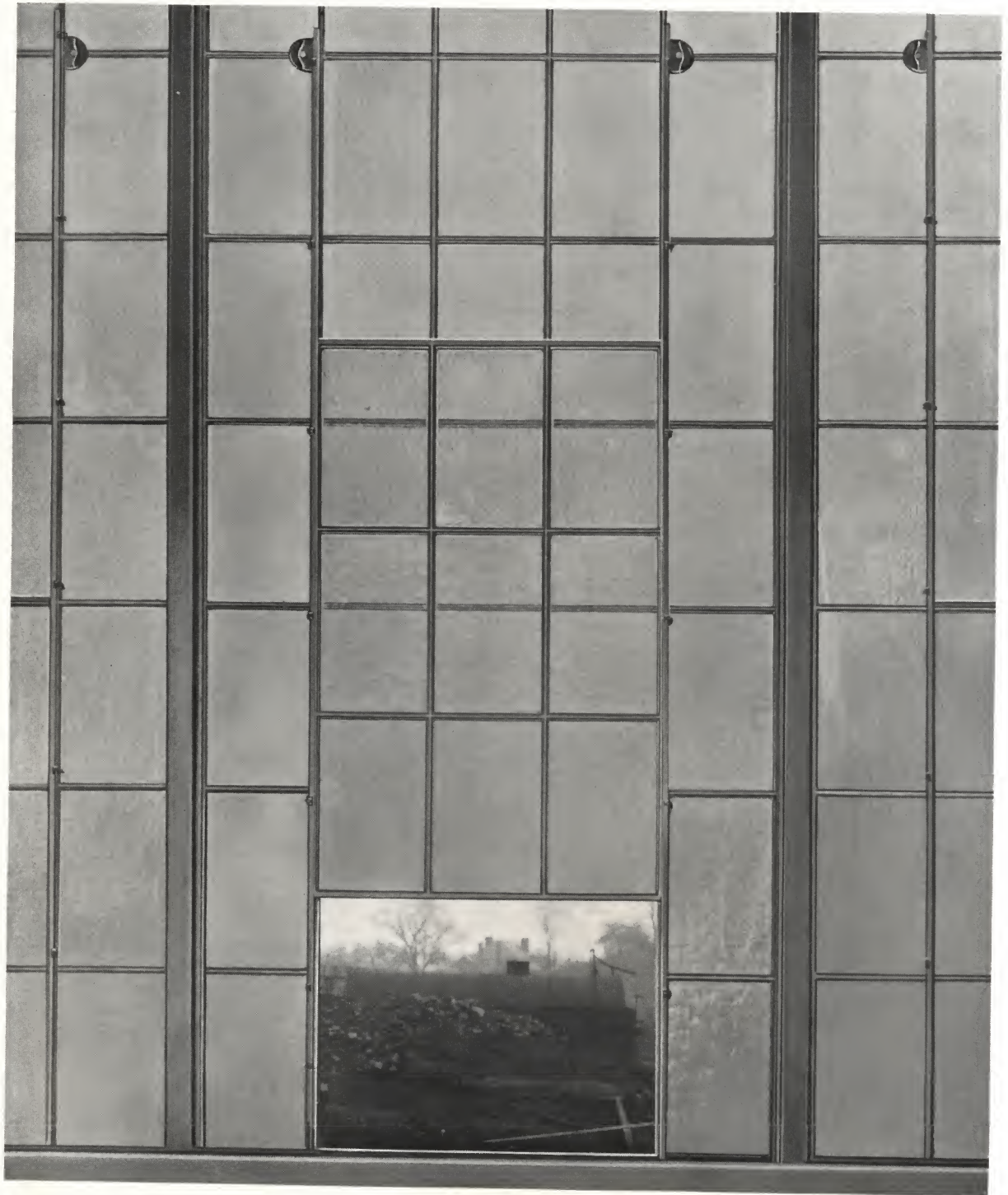
Note:- Ventilator must not extend to Lintel when this detail is used.



Method of Cutting Channel Stop.

Details showing Standard Connections of United Steel Sash to Structural Steel and Masonry.

(We do not supply Structural Steel Connections, such as angles, plates, etc.)



(Patent applied for)

Vertical Sliding Sash with Spring Counter Balance,
as Installed in Building on Page 42.

Vertical and Horizontal Sliding Sash

Tables of Widths and Heights on Pages 29 to 36.

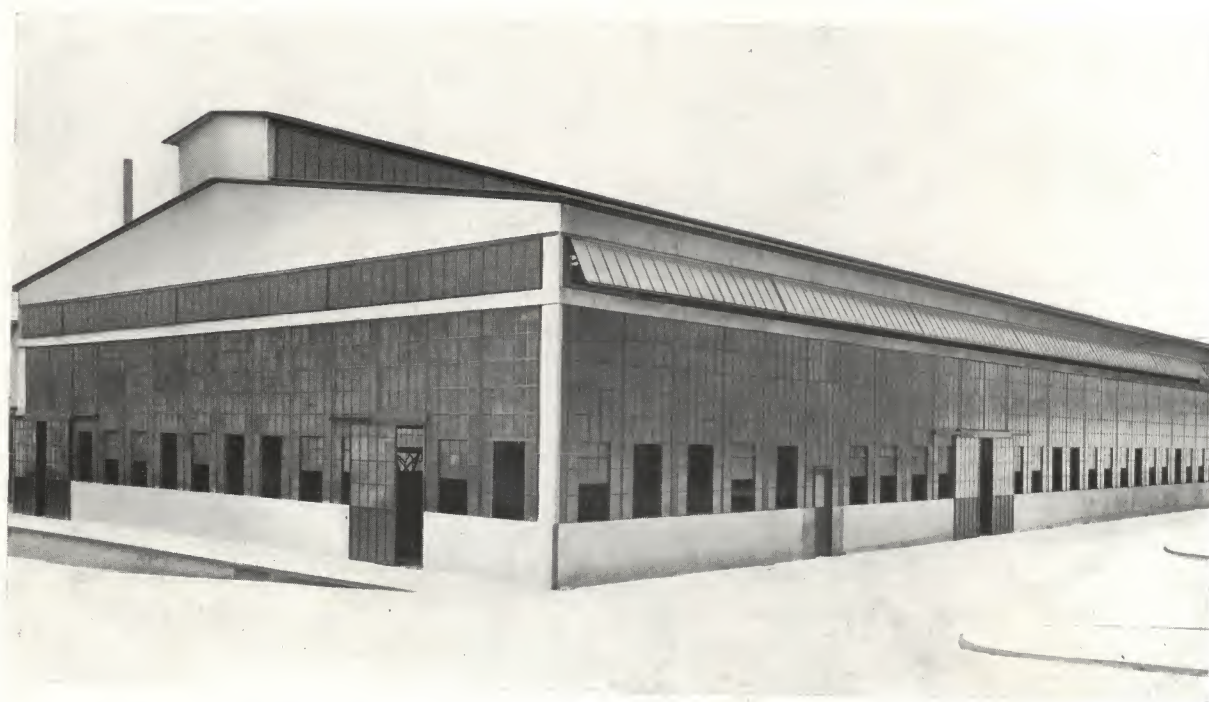
This type of sash is the result of extensive study and experimenting and is designed to fill a long-felt want, eliminating the projecting frames of pivoted ventilators, which interfere with shades, screens, etc. The sash are easily cleaned, and afford a maximum amount of ventilation. Sliding Sash are particularly adapted to industrial buildings, schools, stores, and all structures where a particularly neat appearance is desired.

Vertical Sliding Sash are made in many sizes and operate very readily with spring counter-balances, which hold the ventilator in any desired position. Ventilators, completely glazed, should not weigh over 106 pounds.

Horizontal Sliding Sash are particularly adapted for use in sidewalls and monitors of rolling mills,—also for openings in United Steel Sash partitions.



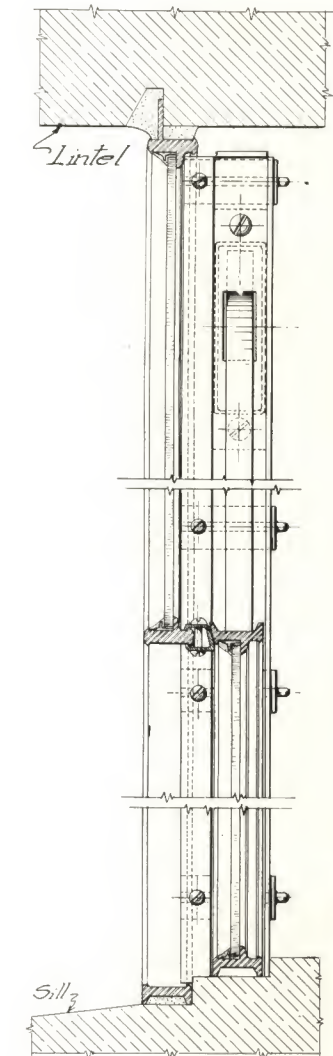
Horizontal Sliding Sash



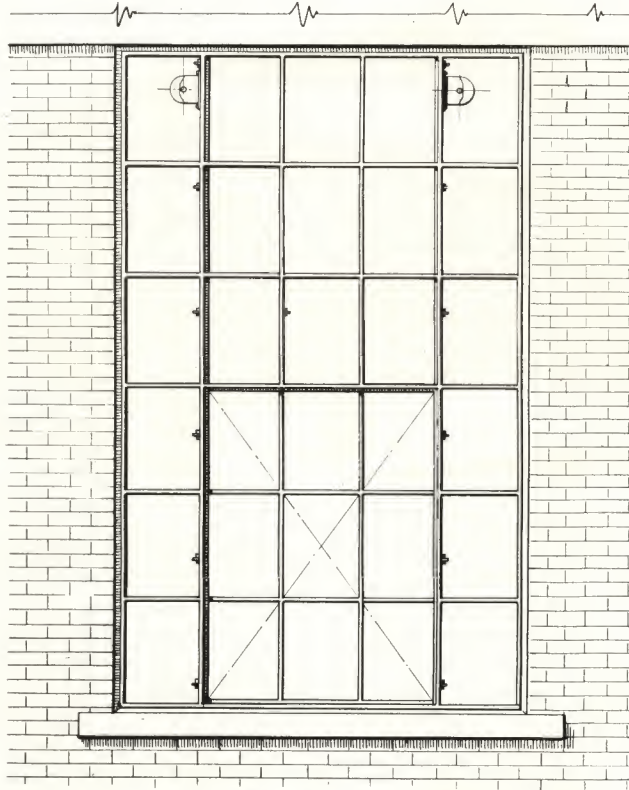
Vertical Sliding Sash Installed in One of the Buildings at our Youngstown Plant.
Showing ventilators closed and partly open.
Note sliding doors of United Steel Sash.

TRUSSED CONCRETE STEEL CO.

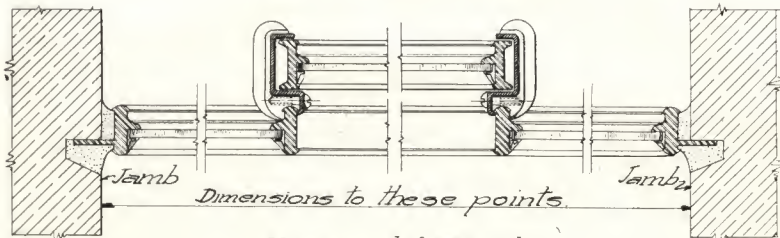
DETROIT, MICH., U. S. A.



Vertical Section.



Elevation.

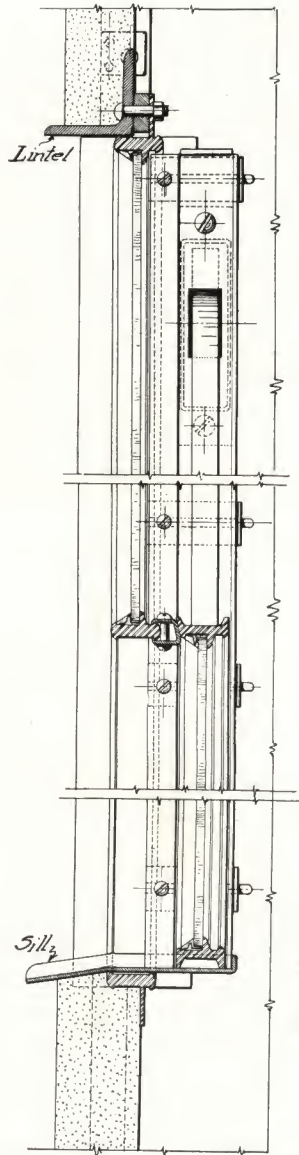


Horizontal Section.

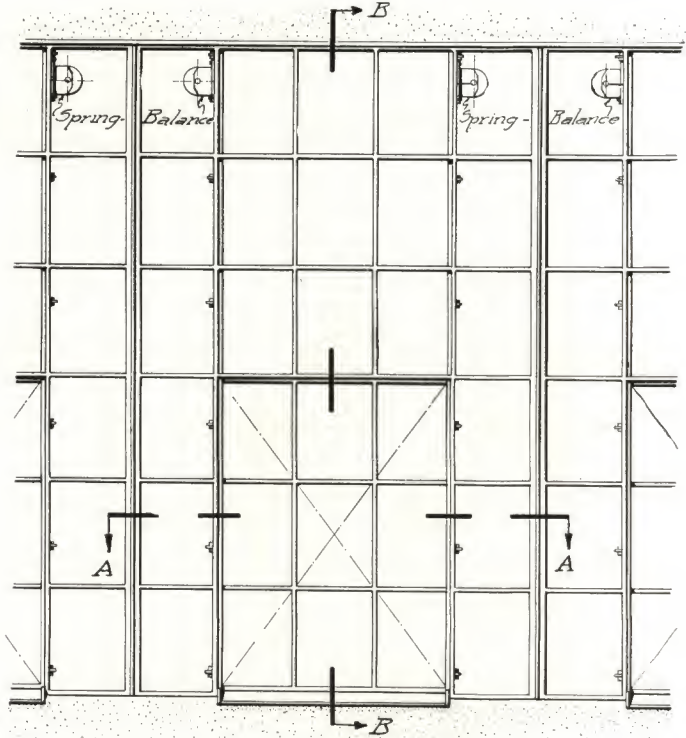


UNITED STEEL SASH		DESIGNED	CHECKED
<i>DETAILS</i> OF <i>VERTICAL SLIDING SASH.</i>			
		DRAWN <i>Stiley</i>	REVISED
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH		DRAWING NO.	

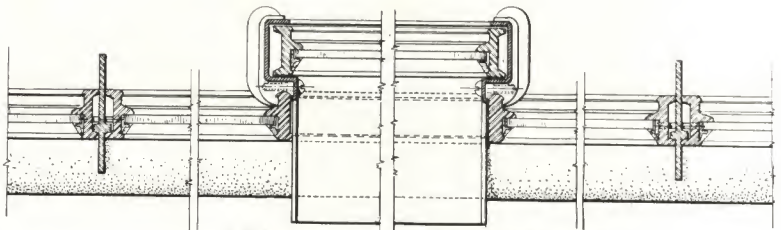
(Patent applied for)



VERTICAL SECTION BB



ELEVATION.



HORIZONTAL SECTION AA.

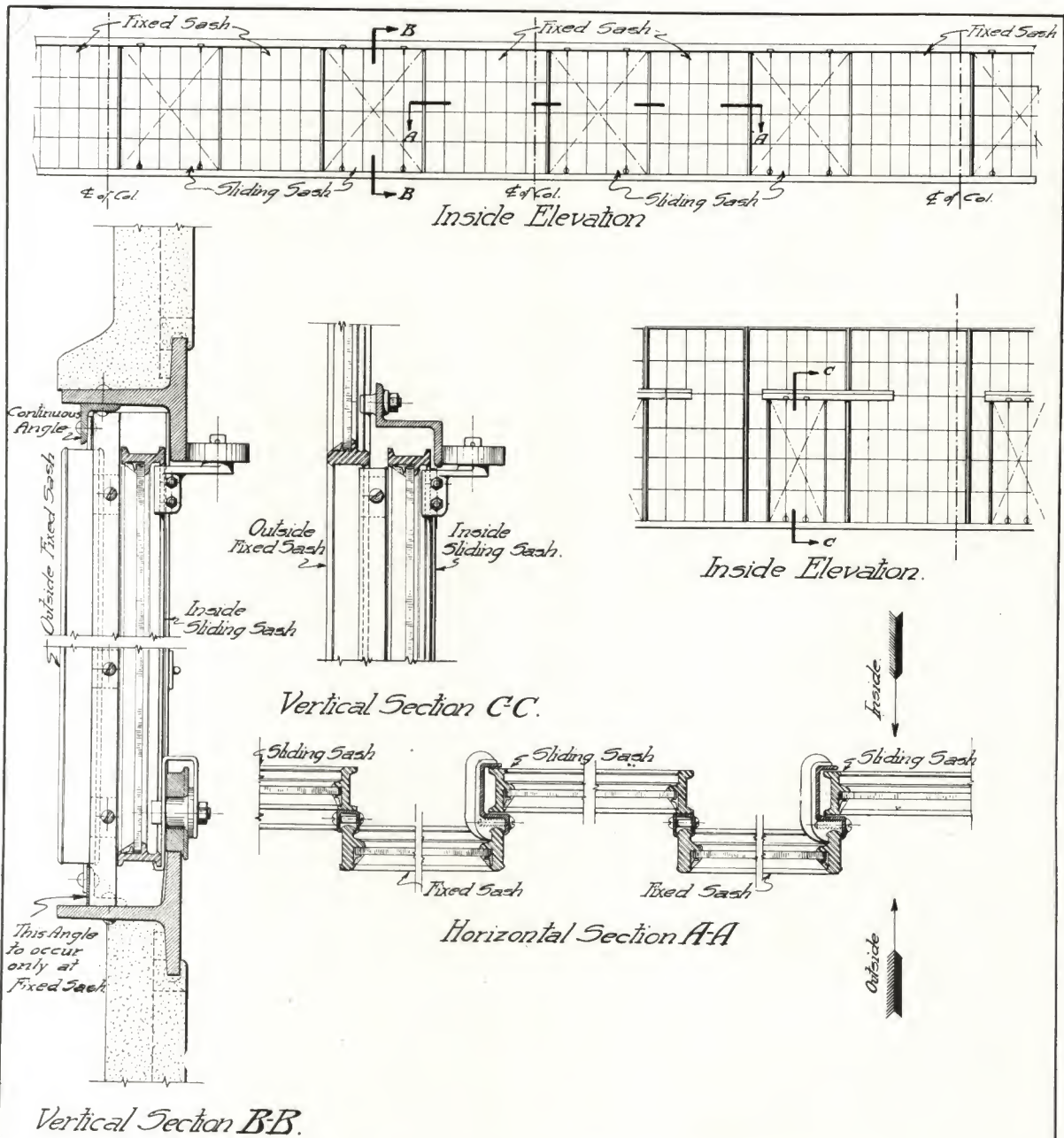


UNITED STEEL SASH		DESIGNED	CHECKED
DETAILS OF VERTICAL SLIDING SASH.		DRAWN	REVISED
		<i>W. H. M.</i>	
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.		DRAWING NO.	

(Patent applied for)

TRUSSED CONCRETE STEEL CO.

DETROIT, MICH., U. S. A.



UNITED STEEL SASH		DESIGNED	CHECKED
DETAILS OF HORIZONTAL SLIDING SASH.		DRAWN	REVISED
		<i>Mr. J.</i>	
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.		DRAWING NO.	



DeVore-McGormley Co., Engineers.

Edward Ford Plate Glass Company, Rossford, Ohio

Note excellent lighting from continuous United Steel Sash in sawtooth construction.
Hy-Rib used in roof.



Continuous United Steel Sash

Continuous United Steel Sash are manufactured by the same process, and have the same strength, high grade of workmanship, and easy method of glazing described in the foregoing pages. The continuous sash differs from the standard sash in the following:

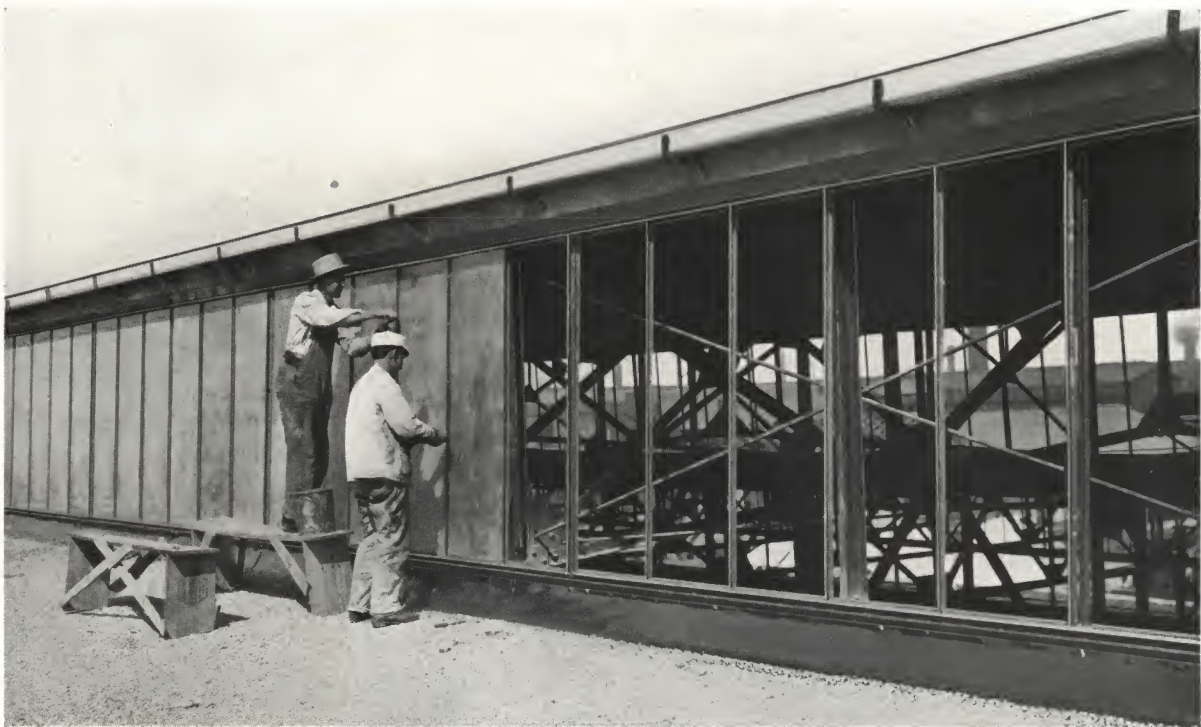
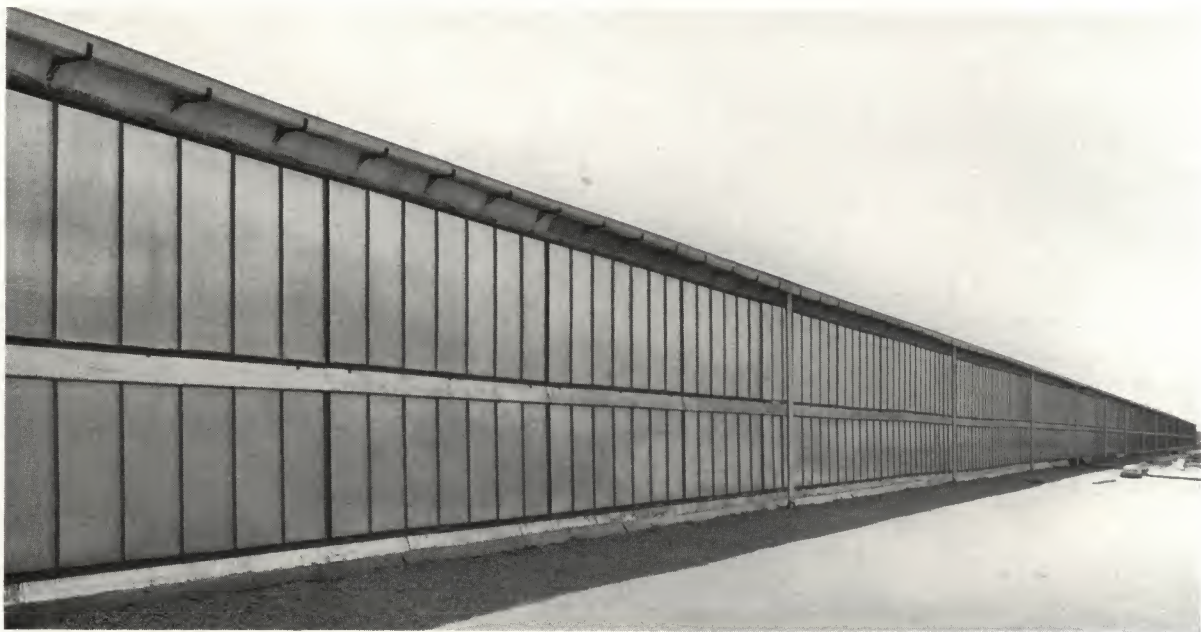
The sash are pivoted at center or hinged at the top to swing in one continuous line. The horizontal muntins are eliminated by using glass which extends the full height of the sash. The bearing for the glass is increased to five-eighth inch on account of the large size of the lights. Larger and heavier clips are provided which fit into specially prepared grooves, giving an absolutely positive method of holding the glass.

Continuous United Steel Sash are manufactured in standard units joined by expandable mullions to operate in one continuous line of any desired length.

This type of sash is especially adapted for use in connection with sawtooth and monitor roof construction, affording a maximum amount of light and ventilation.

Specify Continuous United Steel Sash with expandable mullions. Glaze with one-quarter inch plain ribbed glass bedded in United Steel Sash Putty and properly fastened with extra heavy spring glazing clips.





DeVore-McGormley Co., Engineers.

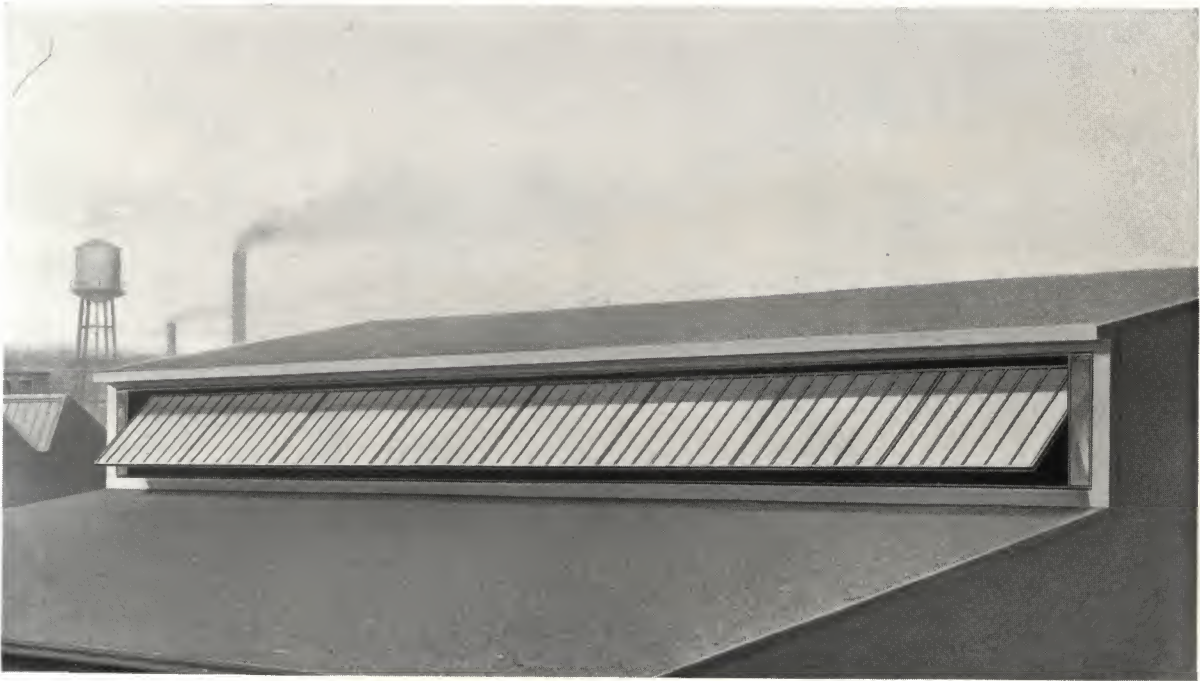
Continuous United Steel Sash

Edward Ford Plate Glass Co., Rossford, Ohio

Note simplicity of glazing with Special Spring Clips.

TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.



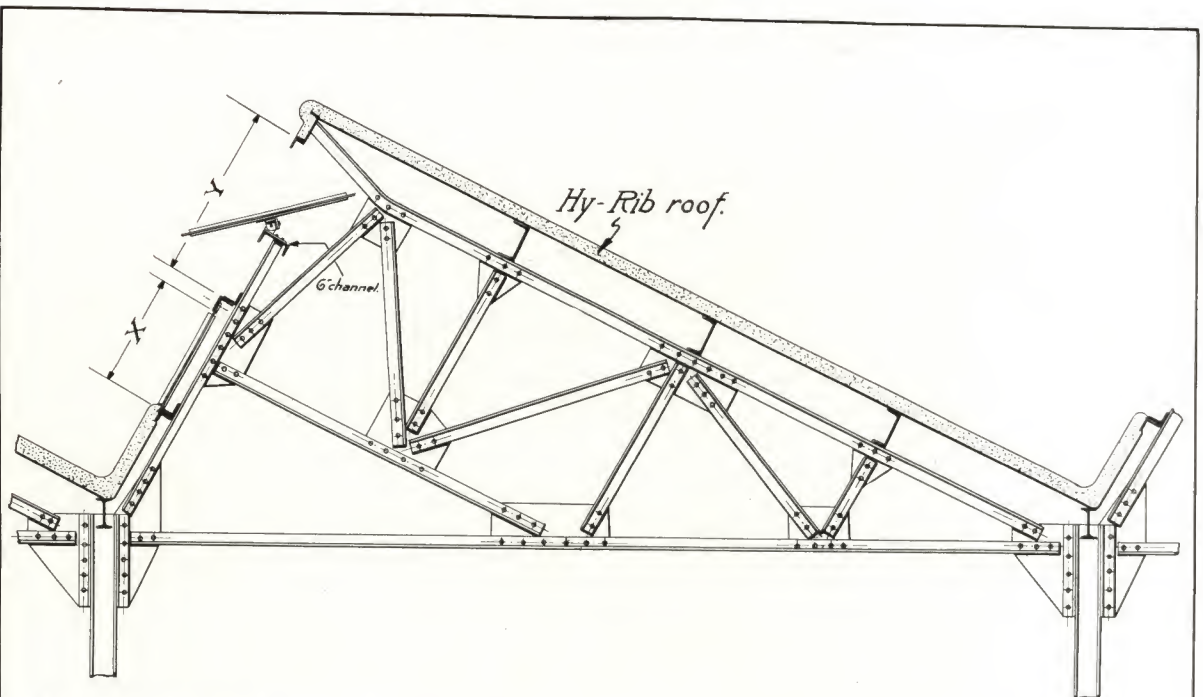
(Patent applied for)

Center Pivoted United Steel Sash

Note effective ventilation obtained, making this sash especially adapted for foundries, forge-shops, machine shops, etc..



Top Hung Continuous Steel Sash



*Table of Dimensions
of heights of openings.*

<i>Fixed sash</i>	<i>Revoled sash</i>
3'-0"	3'-0"
3'-2"	3'-2"
3'-4"	3'-4"
3'-6"	3'-6"
3'-8"	3'-8"
3'-10"	3'-10"
4'-0"	4'-0"
4'-2"	
4'-4"	
4'-6"	
4'-8"	
4'-10"	
5'-0"	
5'-2"	
5'-4"	
5'-6"	
5'-8"	
5'-10"	
6'-0"	

SUGGESTION FOR TRUSSES FOR SAWTOOTH CONSTRUCTION USING CONTINUOUS CENTER HUNG UNITED STEEL SASH.

Notes:

Intermediate supports are to be supplied not more than 7 ft. apart to properly support G-channel and to act as support for operating device.

No structural steel furnished with the sash.

Tables of widths are not given as it is possible to fit any width by means of the type 'D' expandable mullions which are used.

Glass:- Height of glass 2" less than height dimensions of opening



UNITED STEEL SASH		DESIGNED	CHECKED
DETAILS OF CENTER HUNG CONTINUOUS SASH			
		DRAWN <i>Mally</i>	REVISED
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.		12-16-11	
		DRAWING NO. 1020-B.	

TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.

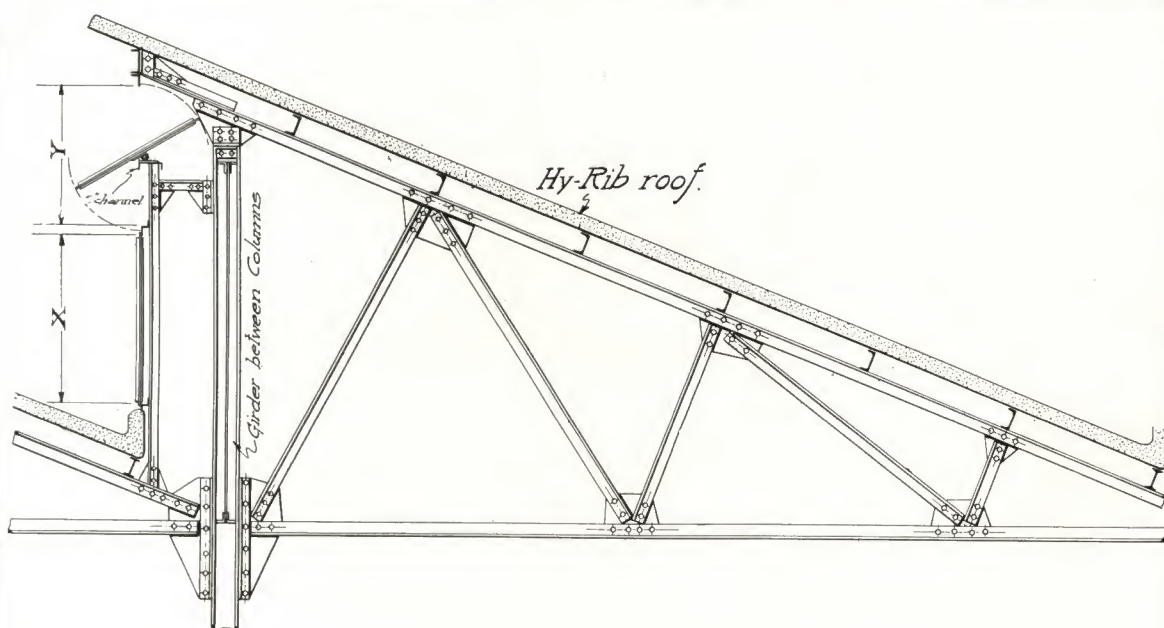


Table of Dimensions
of heights of openings

Fixed sash 'X'	Pivoted sash 'Y'
3'-0"	3'-0"
3'-2"	3'-2"
3'-4"	3'-4"
3'-6"	3'-6"
3'-8"	3'-8"
3'-10"	3'-10"
4'-0"	4'-0"
4'-2"	
4'-4"	
4'-6"	
4'-8"	
4'-10"	
5'-0"	
5'-2"	
5'-4"	
5'-6"	
5'-8"	
5'-10"	
6'-0"	

SUGGESTION FOR TRUSSES FOR LONG SPAN SAWTOOTH CONSTRUCTION USING CONTINUOUS CENTER HUNG UNITED STEEL SASH.

Notes:

Intermediate supports are to be supplied not more than 7ft. apart to properly support channel and to act as support for operating device

No structural steel furnished with the sash.

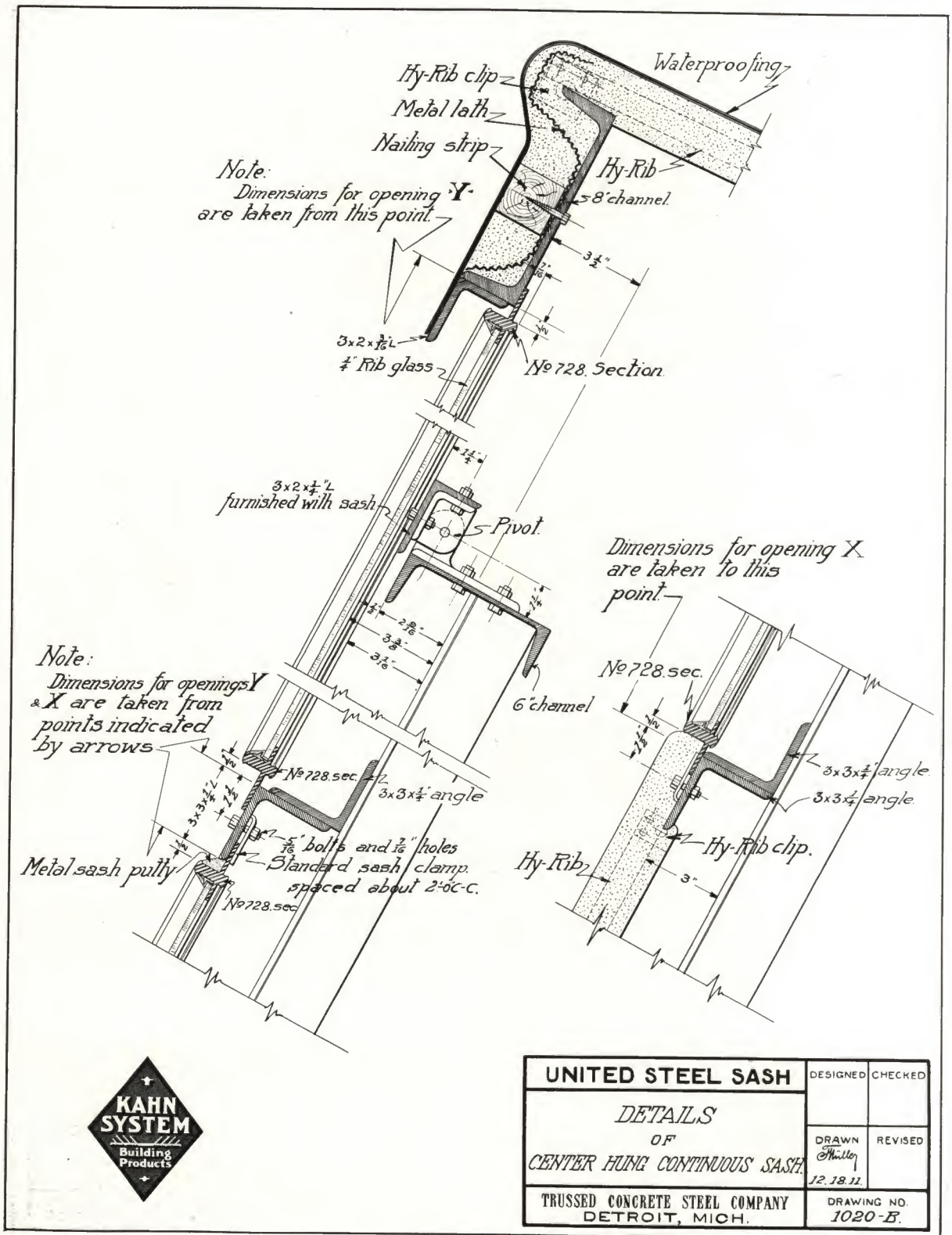
Tables of widths are not given as it is possible to fit any width by means of the type 'D' expandable mullions which are used

Glass:- Height of glass 2' less than height dimensions of opening.

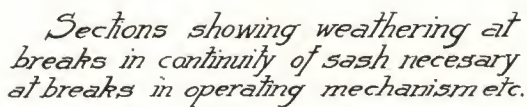


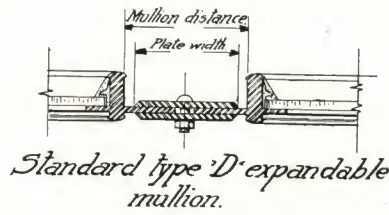
UNITED STEEL SASH		DESIGNED	CHECKED
<i>DETAILS</i> OF CENTER HUNG CONTINUOUS SASH.		DRAWN	REVISED
		<i>May</i>	
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.		DRAWING NO 1020-A'	

U^{nited} S^{teel} SASH

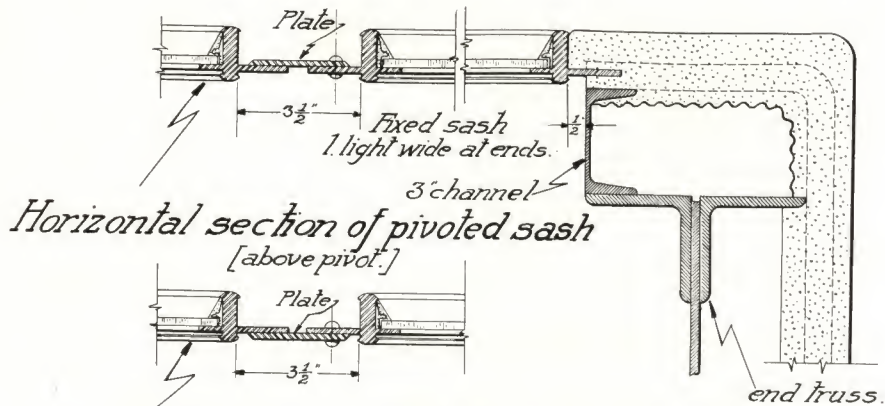


DETROIT MICH., U. S. A.

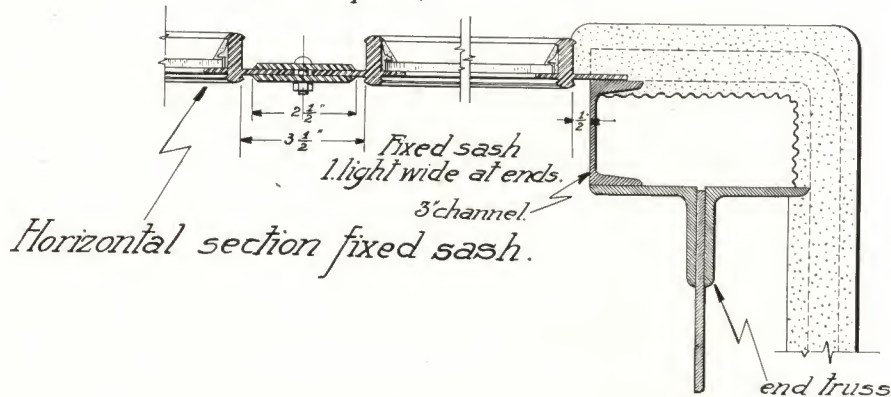




Sections showing weathering at ends of sawtooth.



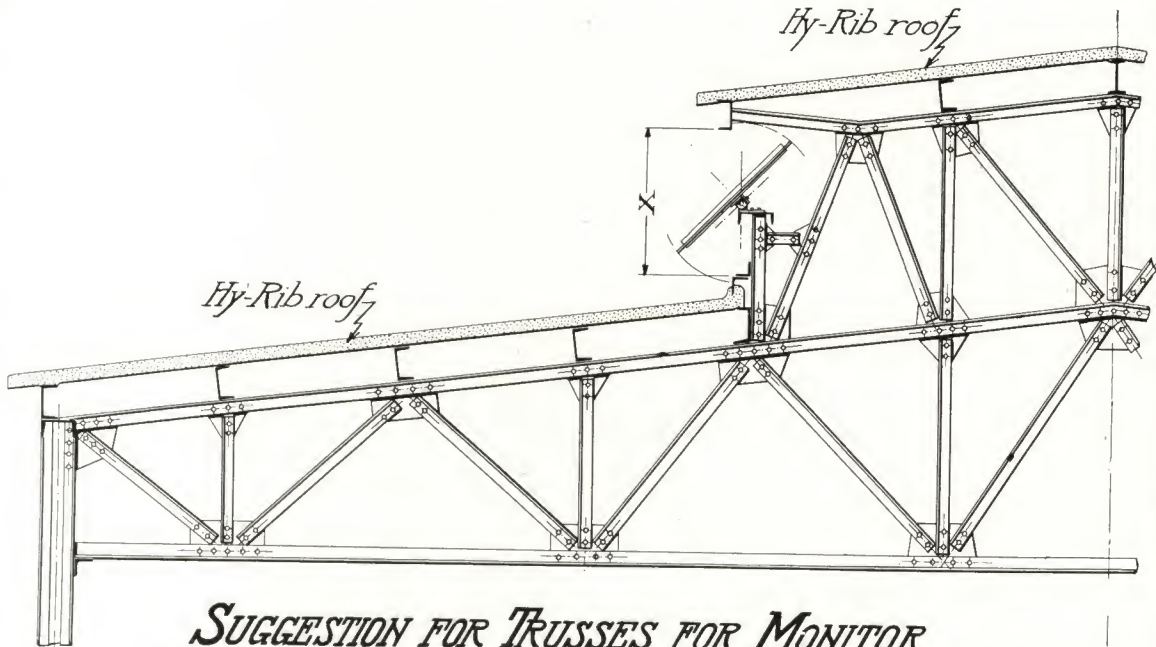
Horizontal section of pivoted sash
[below pivot.]



UNITED STEEL SASH		DESIGNED	CHECKED
DETAILS OF CENTER HUNG CONTINUOUS SASH.		DRAWN	REVISED
		<i>Ellis</i>	
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.		DRAWING NO 1020-D.	

TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.



SUGGESTION FOR TRUSSES FOR MONITOR CONSTRUCTION USING CONTINUOUS CENTER HUNG UNITED STEEL SASH.

Table of dimensions of heights of openings.

Pivoted sash "X"	
3'- 0"	
3'- 2"	
3'- 4"	
3'- 6"	
3'- 8"	
3'- 10"	
4'- 0"	

Notes:-

Intermediate supports are to be supplied not more than 7 ft apart to properly support 6" channel and to act as support for operating device.

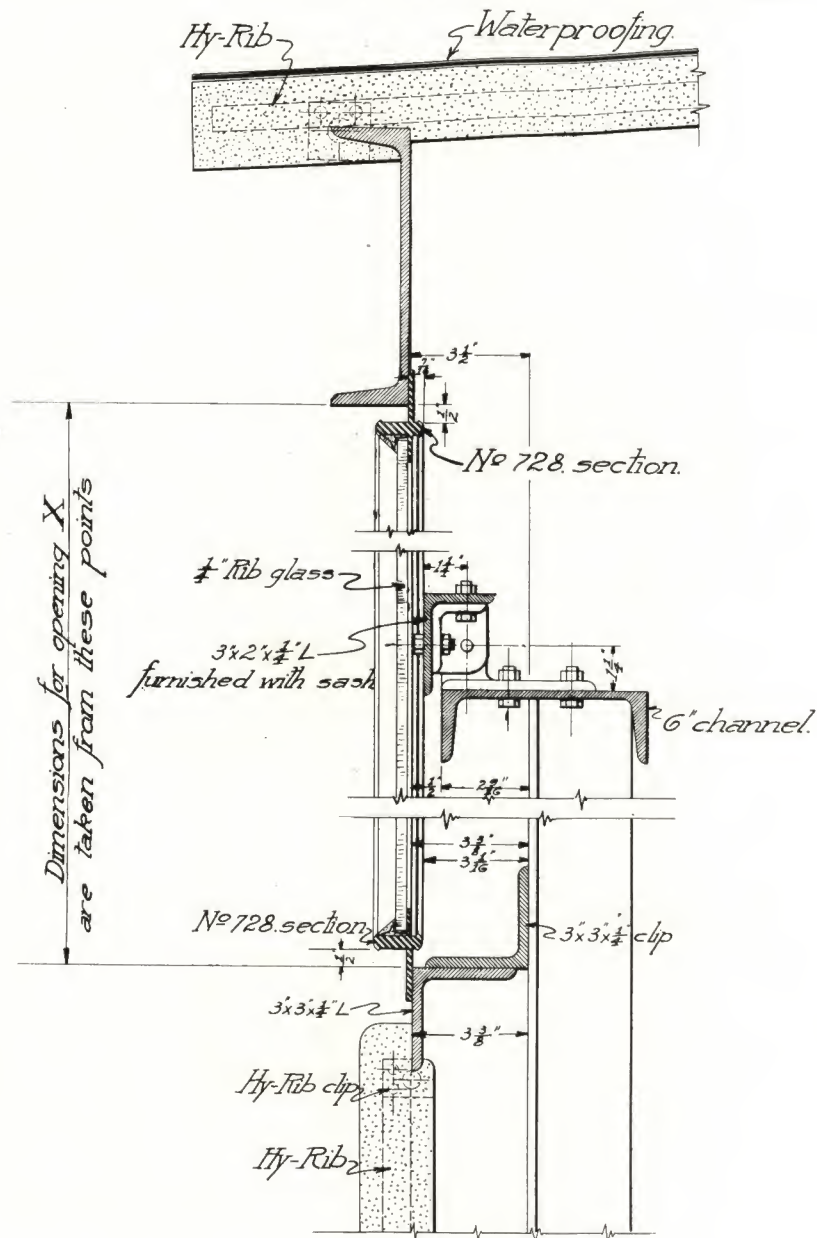
No structural steel furnished with the sash.

Tables of widths are not given as it is possible to fit any width by means of the type 'D' expandable mullions which are used.

Glass:- Height of glass 2" less than height dimensions of opening.



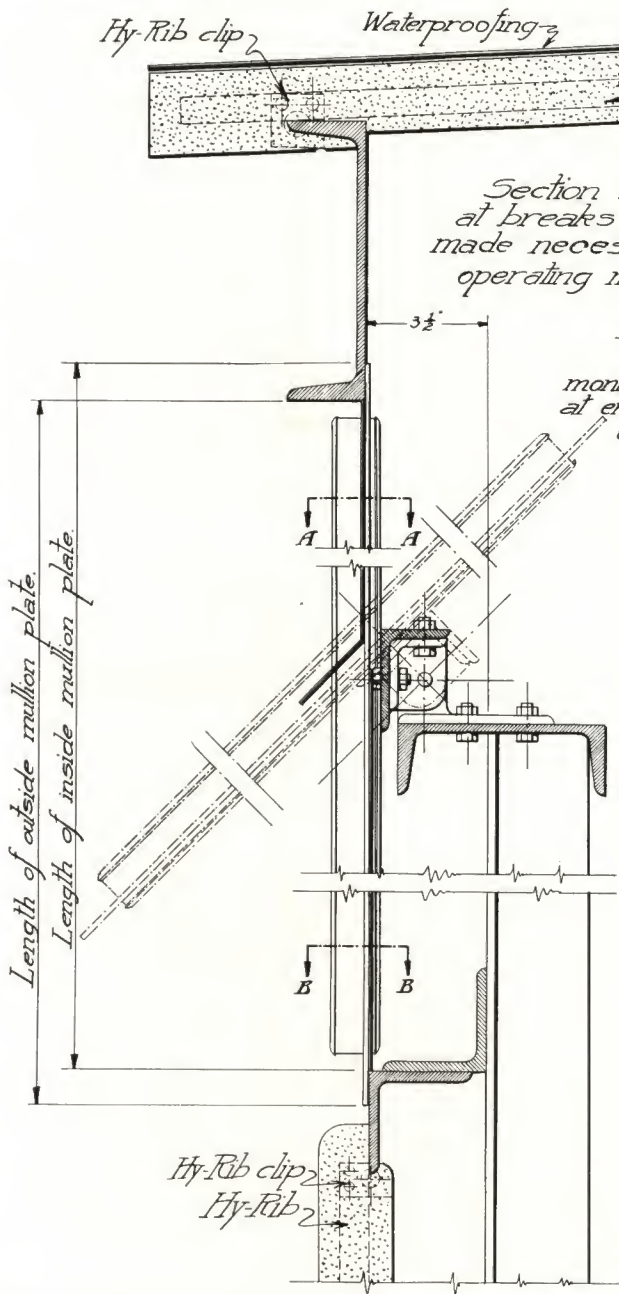
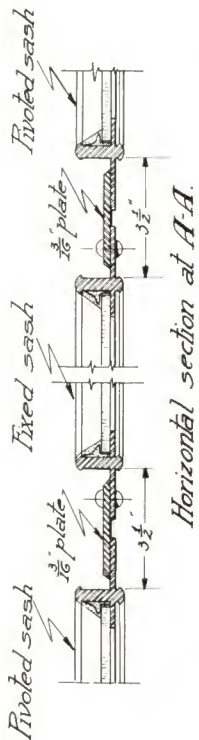
UNITED STEEL SASH		DESIGNED	CHECKED
DETAILS OF CENTER HUNG CONTINUOUS SASH.			
		DRAWN <i>May</i>	REVISED
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.		DRAWING NO 1021-A.	



UNITED STEEL SASH		DESIGNED	CHECKED
DETAILS OF CENTER HUNG CONTINUOUS SASH.			
		DRAWN	REVISED
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.		Mr. J.	
		DRAWING NO.	1021-B

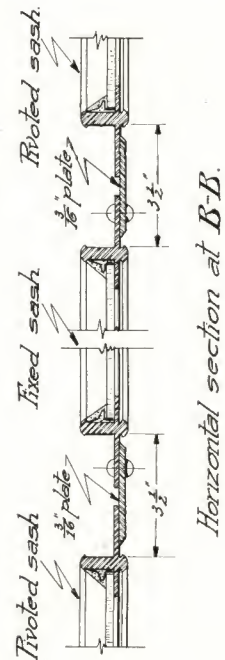
TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.



Section showing weathering at breaks in continuity of sash made necessary at breaks in operating mechanism.

Note:-
Weathering at ends of monitor similar to weathering at ends of sawtooth shown on sheet No 1020-D.



UNITED STEEL SASH		DESIGNED	CHECKED
DETAILS OF CENTER HUNG CONTINUOUS SASH			
		DRAWN <i>Mc</i>	REVISED
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.		DRAWING NO 1021-C.	

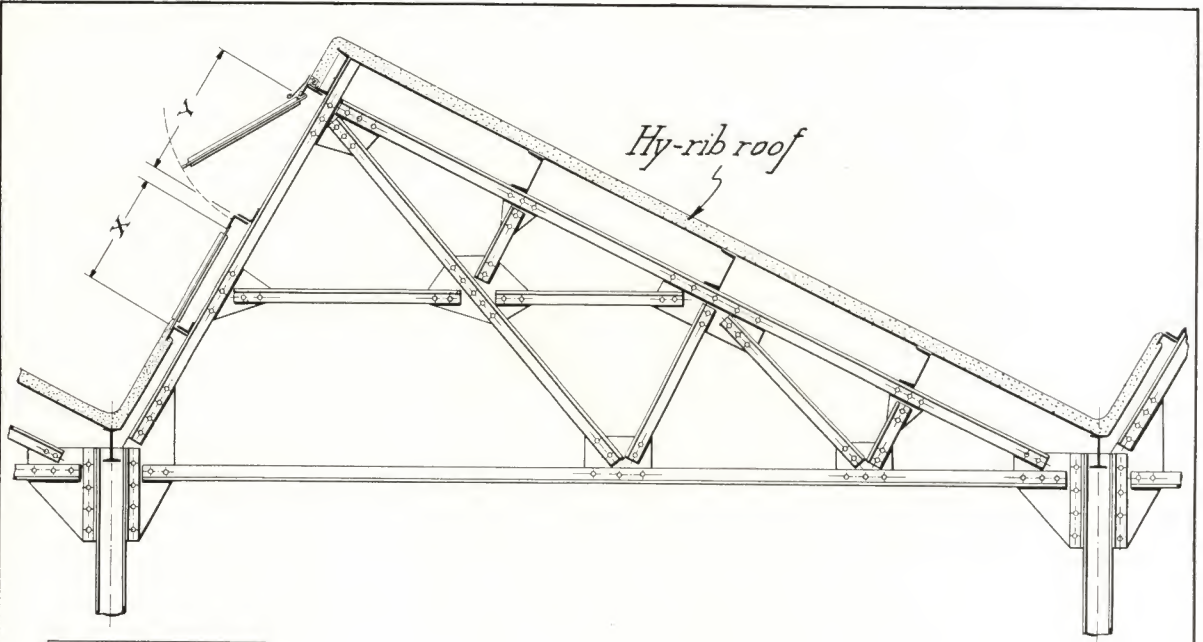


Table of Dimensions
of heights of openings.

Fixed sash X	Hung sash Y
3'-0"	3'-0 $\frac{1}{2}$ "
3'-2"	3'-2 $\frac{1}{2}$ "
3'-4"	3'-4 $\frac{1}{2}$ "
3'-6"	3'-6 $\frac{1}{2}$ "
3'-8"	3'-8"
3'-10"	3'-10"
4'-0"	4'-0 $\frac{1}{2}$ "
4'-2"	4'-2 $\frac{1}{2}$ "
4'-4"	4'-4 $\frac{1}{2}$ "
4'-6"	4'-6 $\frac{1}{2}$ "
4'-8"	4'-8 $\frac{1}{2}$ "
4'-10"	4'-10 $\frac{1}{2}$ "
5'-0"	5'-0 $\frac{1}{2}$ "
5'-2"	5'-2 $\frac{1}{2}$ "
5'-4"	5'-4 $\frac{1}{2}$ "
5'-6"	5'-6 $\frac{1}{2}$ "
5'-8"	5'-8 $\frac{1}{2}$ "
5'-10"	5'-10 $\frac{1}{2}$ "
6'-0"	6'-0 $\frac{1}{2}$ "

SUGGESTION FOR TRUSSES FOR SAWTOOTH CONSTRUCTION USING CONTINUOUS TOP HUNG UNITED STEEL SASH.

Notes:

Intermediate supports are to be supplied not more than 7 ft. apart to properly support operating device.

No structural steel furnished with the sash.

Tables of widths are not given as it is possible to fit any width by means of the type 'D' expandable mullions which are used.

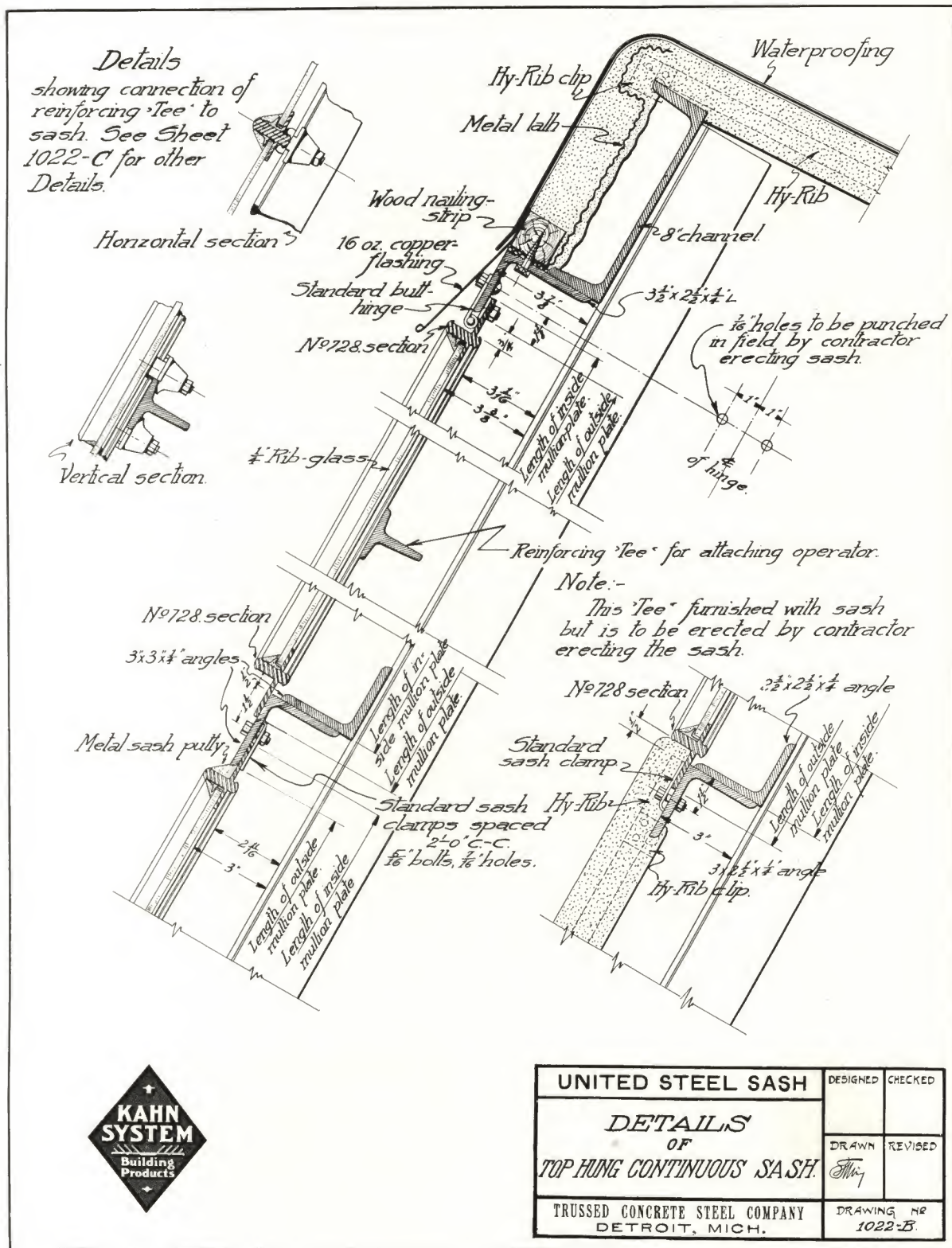
Glass: Height of glass 2" less than height dimensions of opening for 'X' and 2 $\frac{1}{2}$ " less than opening for 'Y'.



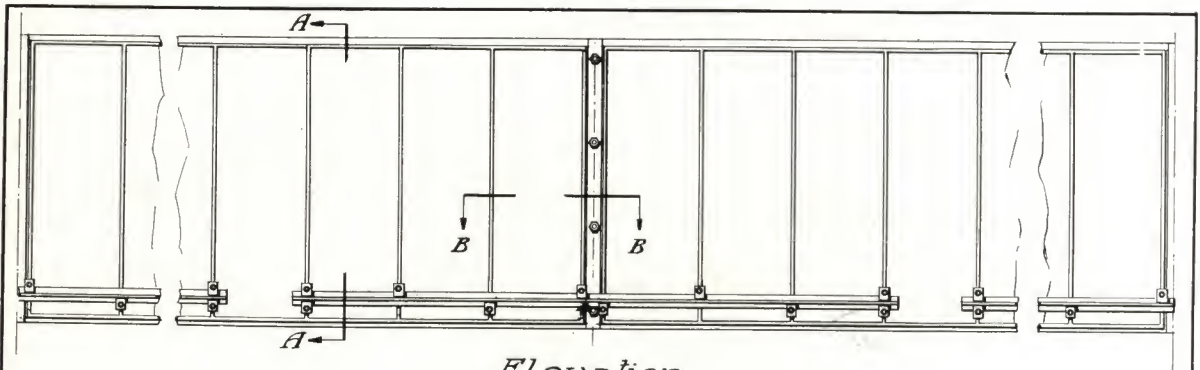
UNITED STEEL SASH		DESIGNED	CHECKED
DETAILS OF TOP HUNG CONTINUOUS SASH		DRAWN	REVISED
		Mr. J.	
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.		DRAWING NO. 1022-A.	

TRUSSED CONCRETE STEEL CO.

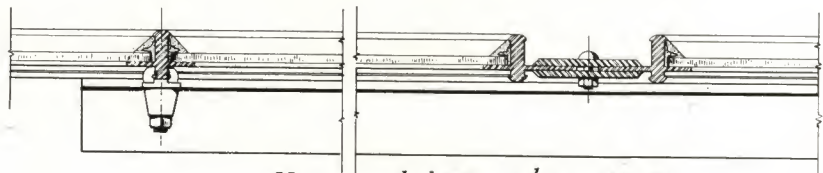
DETROIT MICH., U. S. A.



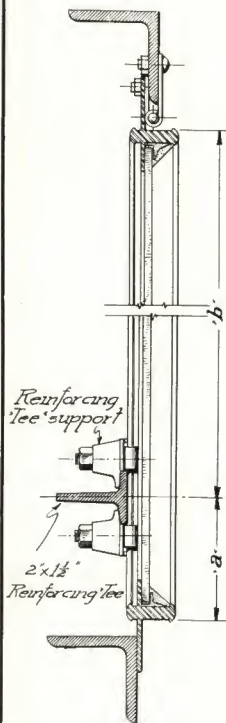
U^{nited} S^{teel} SASH



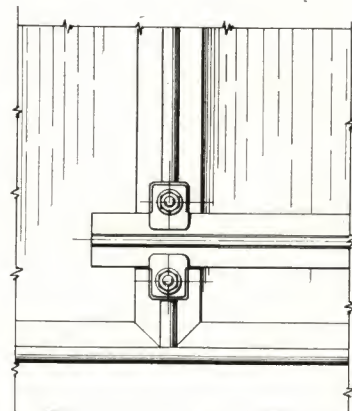
Elevation.



Horizontal Section B-B



Vertical Section
A-A



Elevation of Reinforcing
Tee Support

Note:-

For sash 4'-0" in height and under, dimension *a* = 3½" and dimension *b* varies with sash height

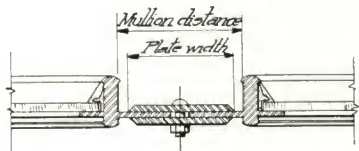
For sash over 4'-0" in height dimension *b* = 3'-8½" and dimension *a* varies with sash height



UNITED STEEL SASH		DESIGNED	CHECKED
DETAILS OF REINFORCING TEE FOR CONTINUOUS TOP HUNG SASH.		DRAWN	REVISED
		<i>[Signature]</i>	
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.		DRAWING NO. 1022-C.	

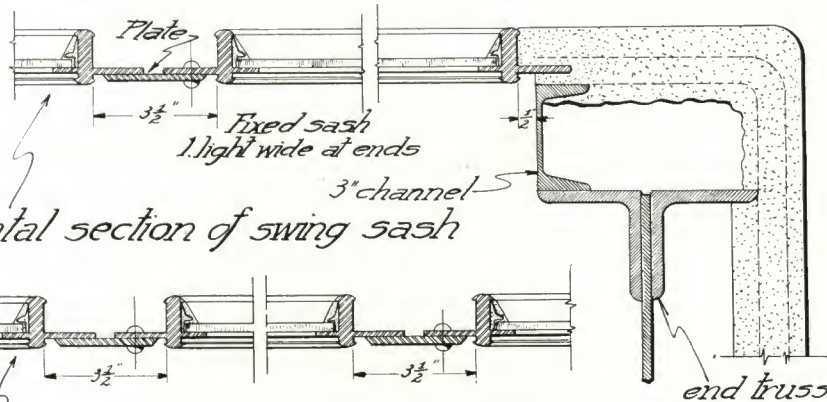
TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.

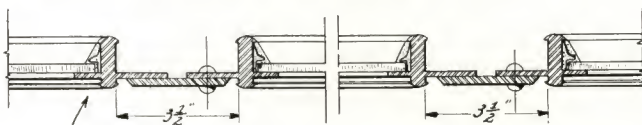


Standard type D expandable mullion.

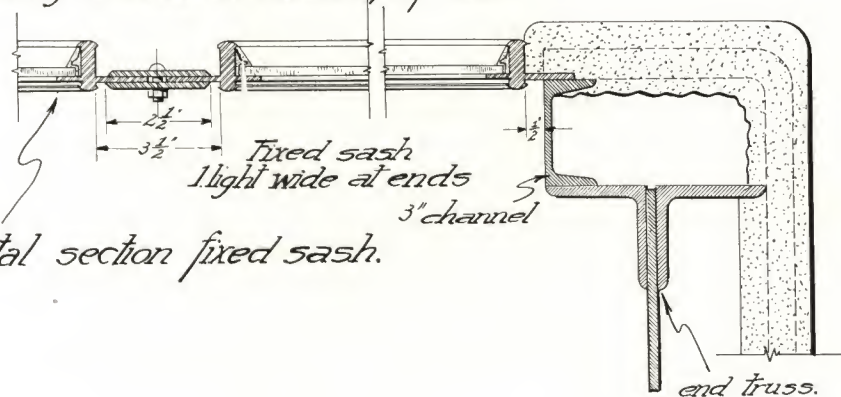
Sections showing weathering at ends of sawtooth.



Horizontal section of swing sash



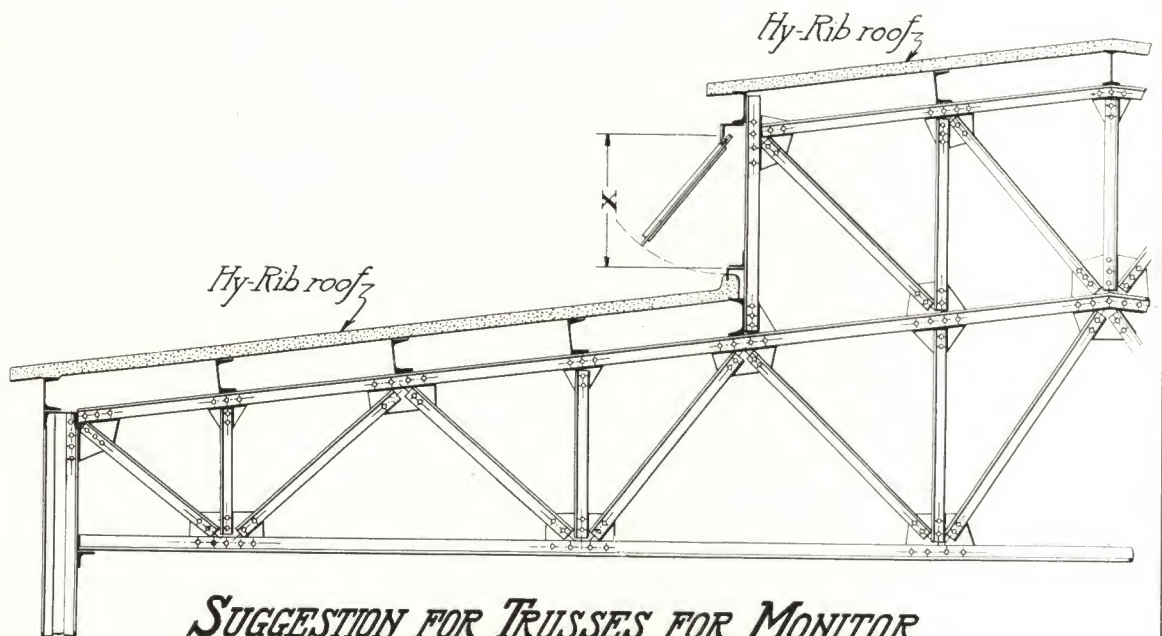
Horizontal section at intermediate panels showing breaks in continuity of sash.



Horizontal section fixed sash.



UNITED STEEL SASH		DESIGNED	CHECKED
DETAILS OF TOP HUNG CONTINUOUS SASH		DRAWN	REVISED
		Stuy	
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.		DRAWING NO. 1022-D.	



SUGGESTION FOR TRUSSES FOR MONITOR CONSTRUCTION USING CONTINUOUS TOP HUNG UNITED STEEL SASH.

Table of dimensions of heights of openings.

Top Hung X	
3'- 0"	4'- 8"
3'- 2"	4'- 10"
3'- 4"	5'- 0"
3'- 6"	5'- 2"
3'- 8"	5'- 4"
3'- 10"	5'- 6"
4'- 0"	5'- 8"
4'- 2"	5'- 10"
4'- 4"	6'- 0"
4'- 6"	

Notes:-

Intermediate supports are to be supplied not more than 7 ft. apart to properly support operating device.

No structural steel furnished with the sash.

Tables of widths are not given as it is possible to fit any width by means of the type D expandable mullions which are used.

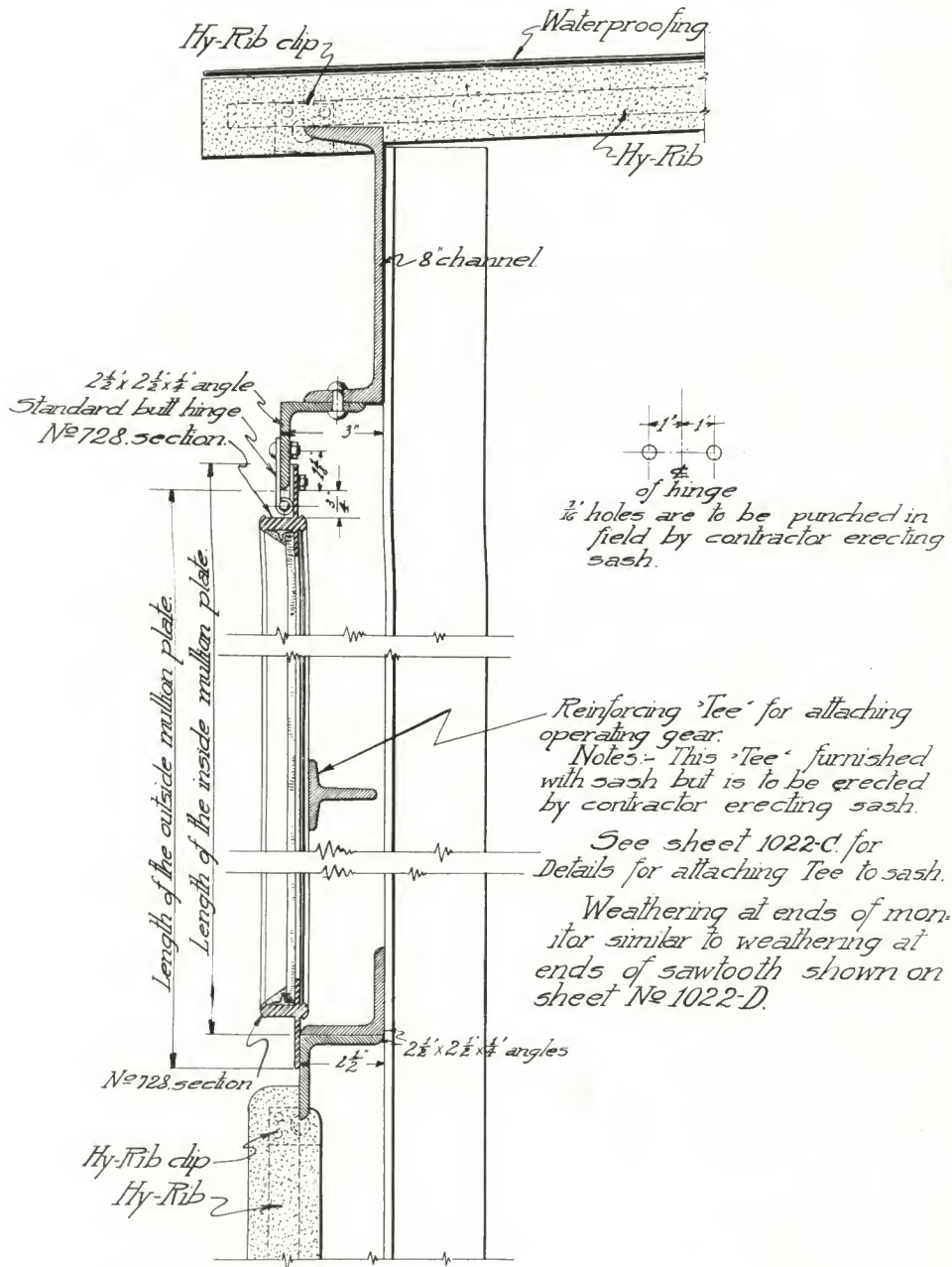
Glass:- Height of glass $2\frac{1}{4}$ " less than height dimensions of opening.



UNITED STEEL SASH		DESIGNED	CHECKED
DETAILS OF TOP HUNG CONTINUOUS SASH			
		DRAWN	REVISED
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.		DRAWING NO 1023-A.	

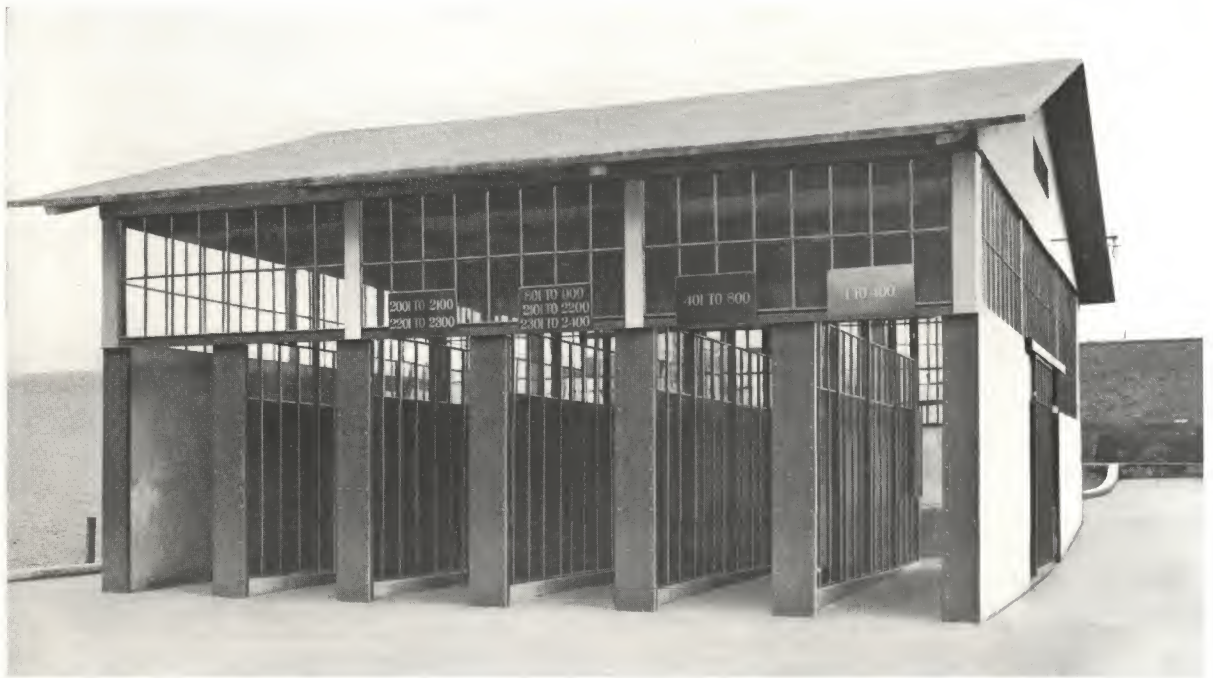
TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.



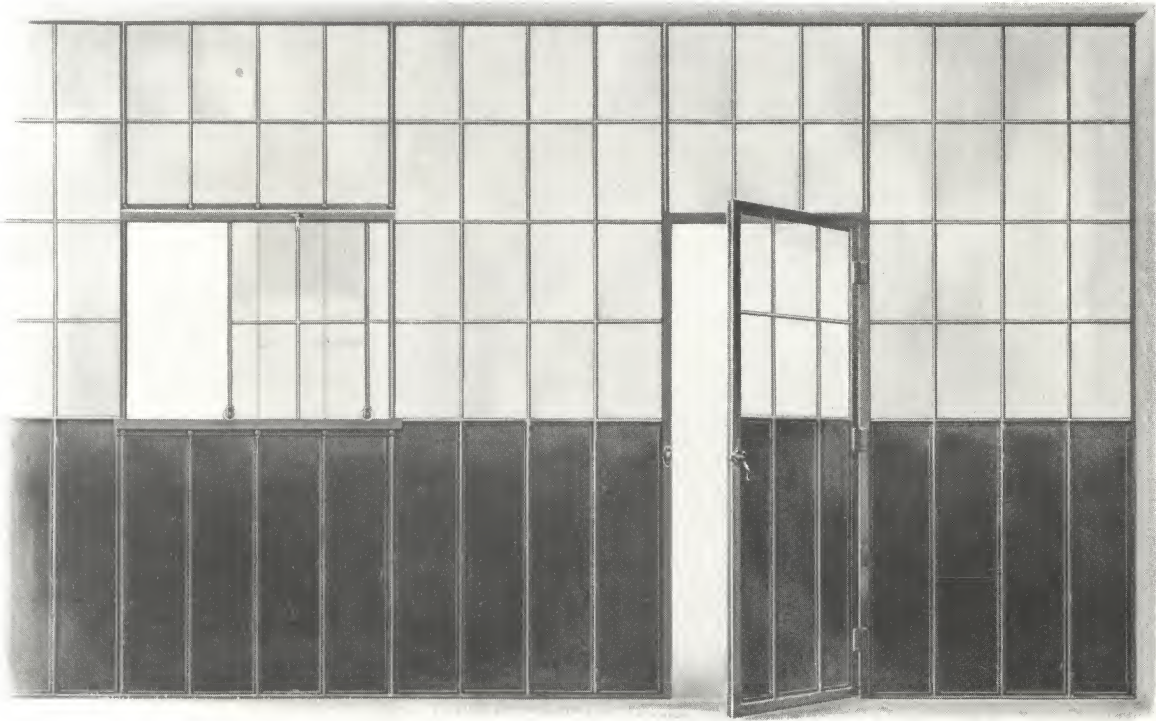
UNITED STEEL SASH		DESIGNED	CHECKED
DETAILS OF TOP HUNG CONTINUOUS SASH.		DRAWN	REVISED
		THY	
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.		DRAWING NO 1023-E.	

U^{nited} S^{teel} SASH



United Steel Sash Partitions in Time Office Building
at Our Youngstown Plant.

Note also United Steel Sash in side walls and Hy-Rib Concrete Construction of sidings and roofs.



United Steel Sash Partitions

United Steel Sash makes very excellent and economical partitions for office buildings, warehouses, factories, etc.

This type of partition affords a maximum amount of daylight, takes up practically no floor space being only $1\frac{3}{8}$ " thick, can be taken down and set up to allow for changes in building arrangement, and provides fireproof and permanent equipment at very low first cost.

These partitions are divided into panels, which may be filled with either glass or sheet steel to meet all requirements of light. This arrangement may be changed at any time without causing expensive alterations in the partition construction.

These partitions are made up of United Steel Sash to fit openings of practically any height and width. The partitions may be equipped with horizontal sliding ventilators as shown on page 41, and with swinging or sliding doors to meet all requirements of shipping rooms, time offices, stock rooms, etc.

We will gladly furnish details and estimates upon request.

U^{nited} S^{teel} SASH



United Steel Sliding Doors Opening at Center.



Interior View of Double Sliding Door



Single Sliding United Steel Door

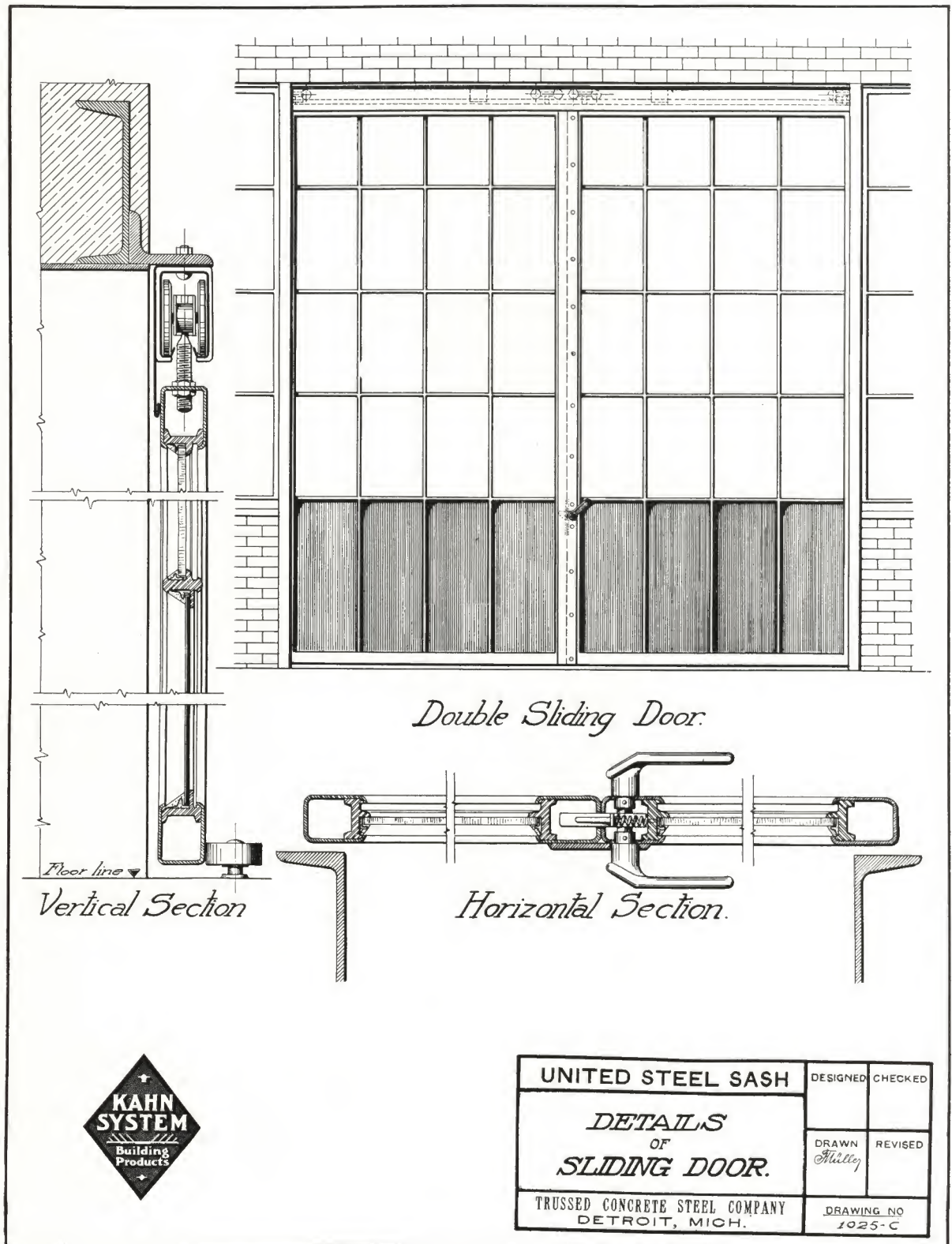
TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.



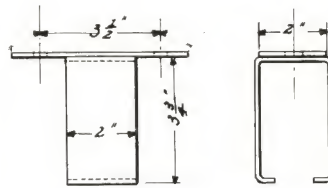
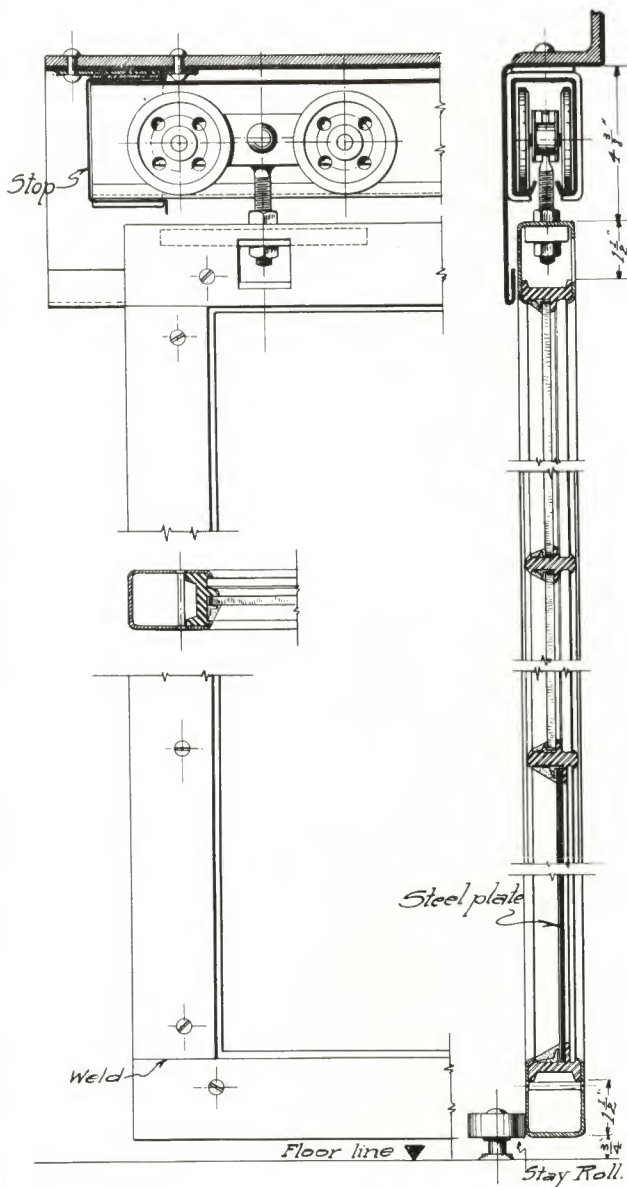
United Steel Doors

United Steel Doors for interior partitions and exterior walls provide fireproof and permanent equipment, replacing the old style wooden doors, which communicate fire and are short lived. United Steel Doors are manufactured with the same high quality of workmanship and material as United Steel Sash. The doors are divided into panels which may be filled with either glass or sheet steel to meet all requirements. Outside doors can be fitted partly or wholly with glass, admitting maximum daylight to the interior. United Steel Doors are furnished in various types of double and single, sliding and swing doors, have an attractive appearance, and are readily operated. The doors are manufactured with a heavy rolled steel stile, which holds the doors rigid and true to line. Special information and details will be sent upon request.

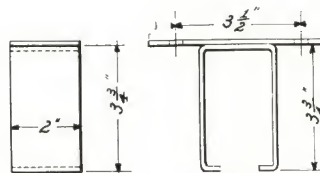


TRUSSED CONCRETE STEEL CO.

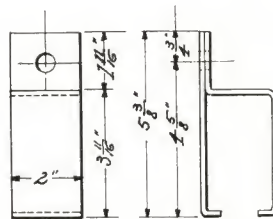
DETROIT MICH., U. S. A.



Bracket No 47.



Bracket No 45.



Bracket No 43.

Notes:-

Tracks furnished in 4, 6, 8, 10 and 12 foot lengths.

Brackets spaced not more than 3'-0" apart.

Special brackets furnished as required.



UNITED STEEL SASH		DESIGNED	CHECKED
DETAILS OF HORIZONTAL SLIDING DOORS			
		DRAWN <i>Stille</i>	REVISED
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.		DRAWING NO. 1025-D	

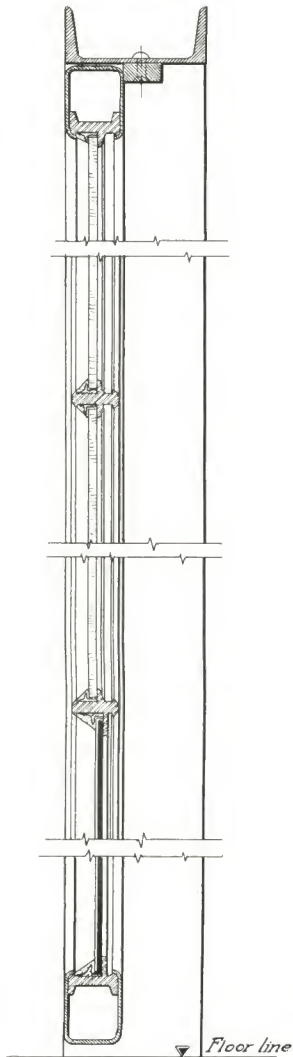


United Steel Swing Doors.

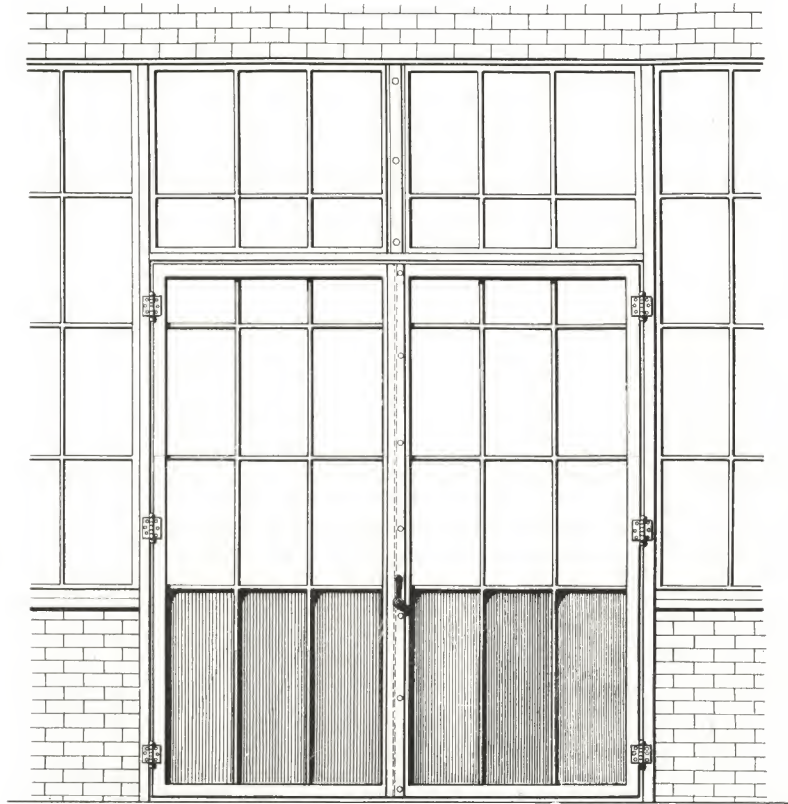
Before and after glazing. May be used in United Steel Sash partitions or in walls.

TRUSSED CONCRETE STEEL CO.

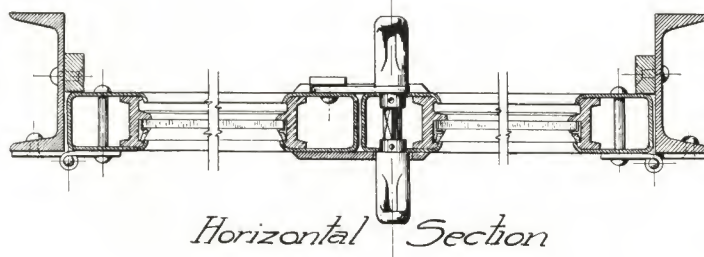
DETROIT MICH., U. S. A.



Vertical Section



Double Swing Door.

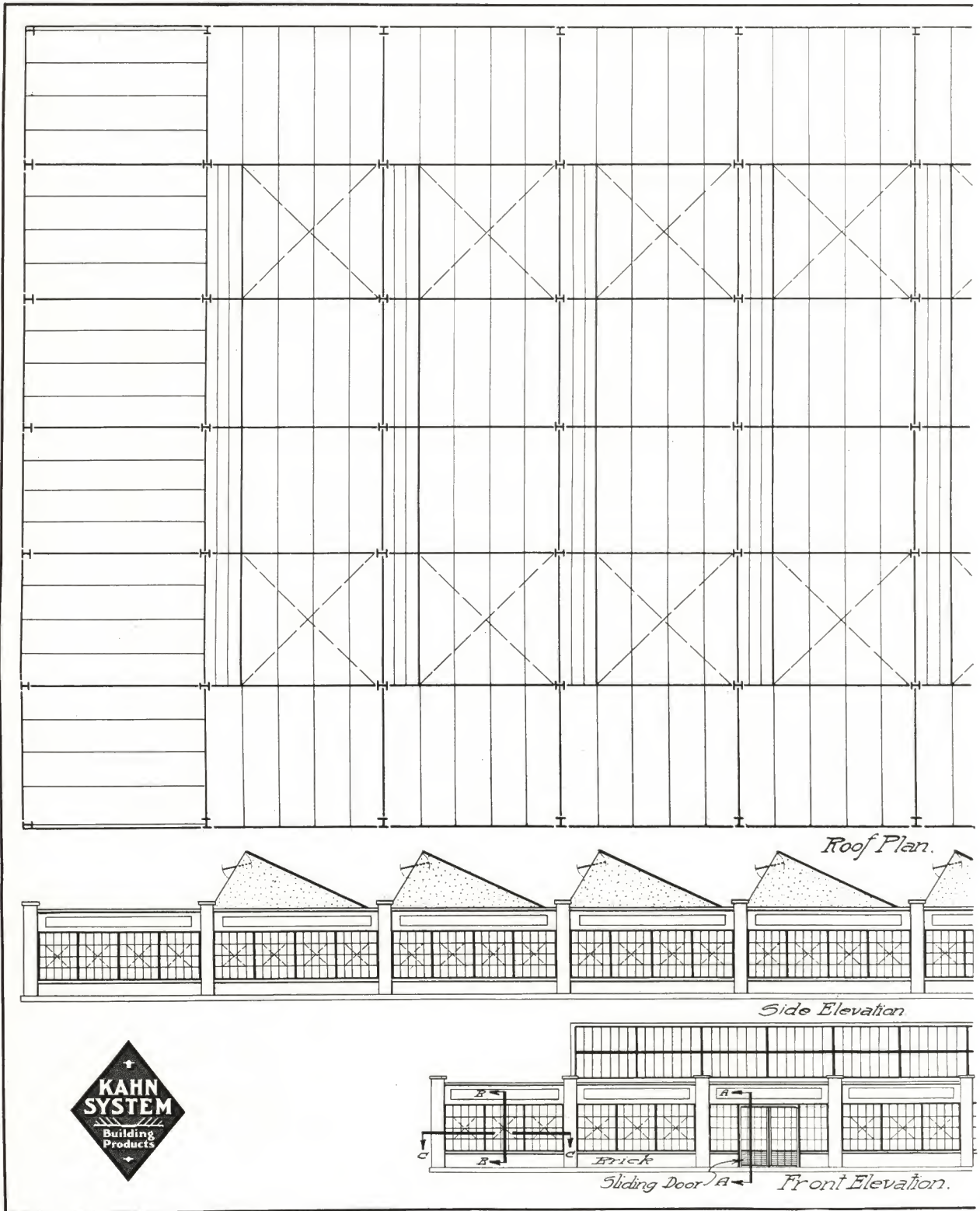


Horizontal Section



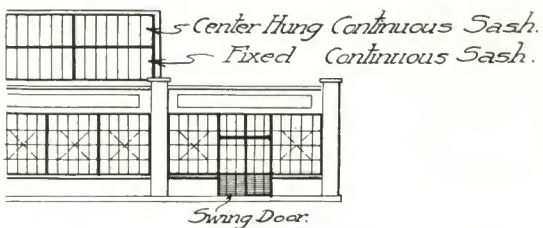
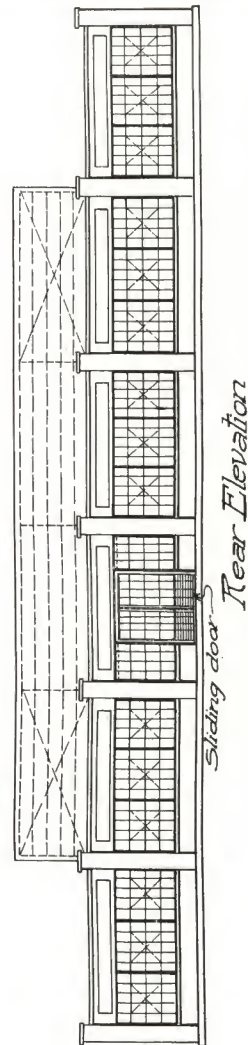
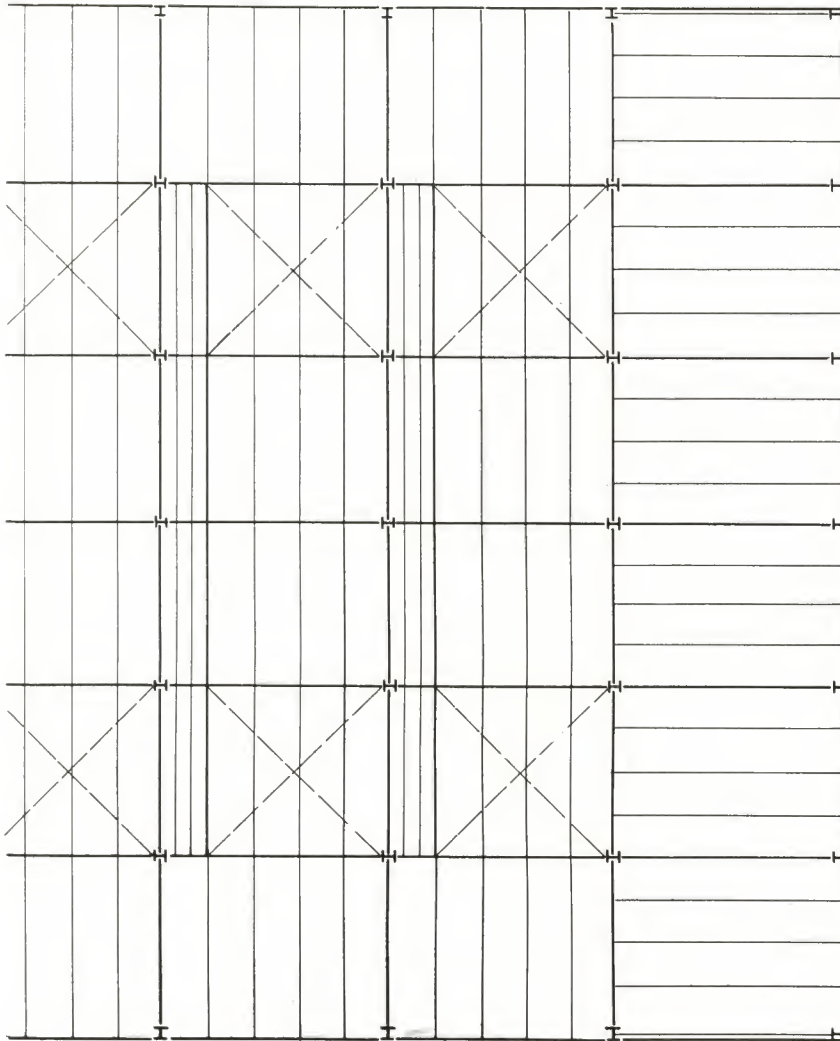
UNITED STEEL SASH		DESIGNED	CHECKED
DETAILS OF SWING DOOR		DRAWN <i>Hilley</i>	REVISED
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.		DRAWING NO 1025-E.	

U^{nited} S^{teel} SASH



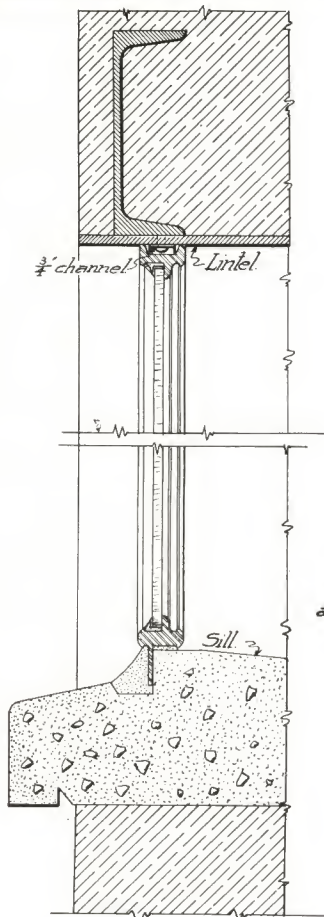
TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.

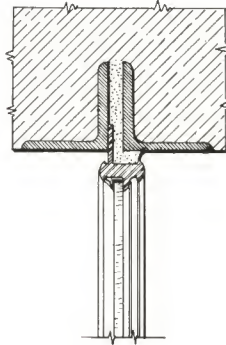


UNITED STEEL SASH		DESIGNED	CHECKED
TYPICAL INSTALLATION ONE STORY SAWTOOTH FACTORY BUILDING.		DRAWN <i>Fuller</i>	REVISED
		DRAWING NO 1025-A	
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.			

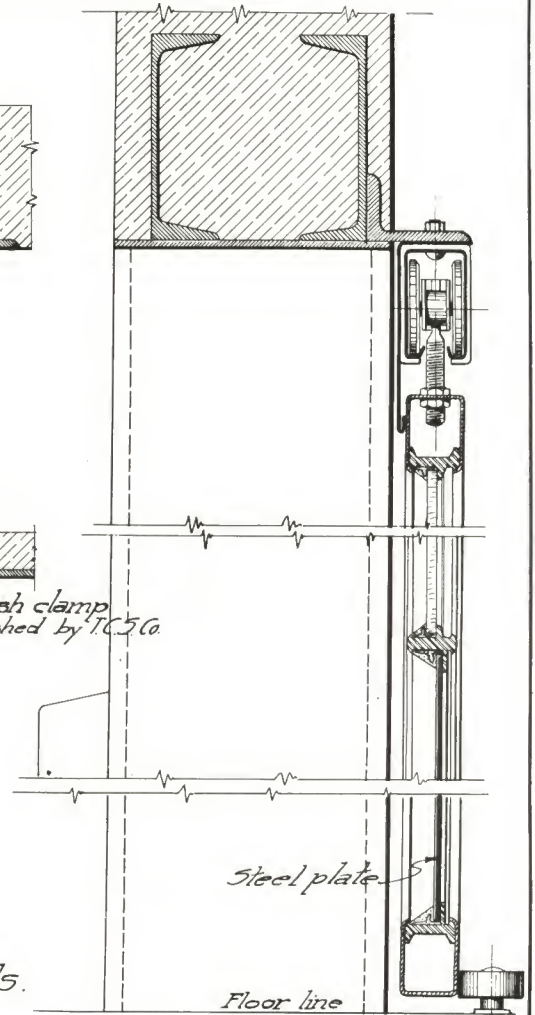
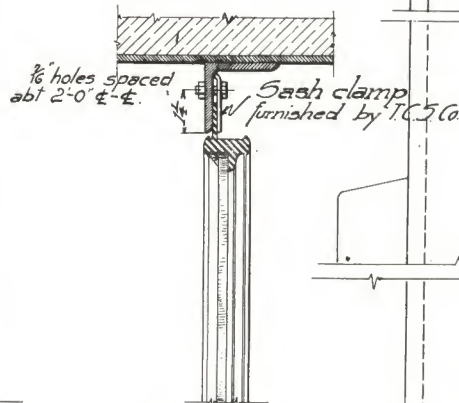
United Steel SASH



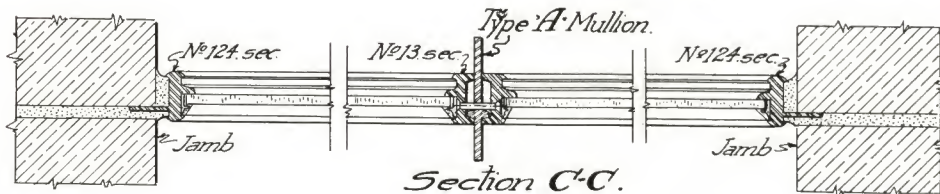
Section B-B.



Alternate Lintel Details.



Section A-A.



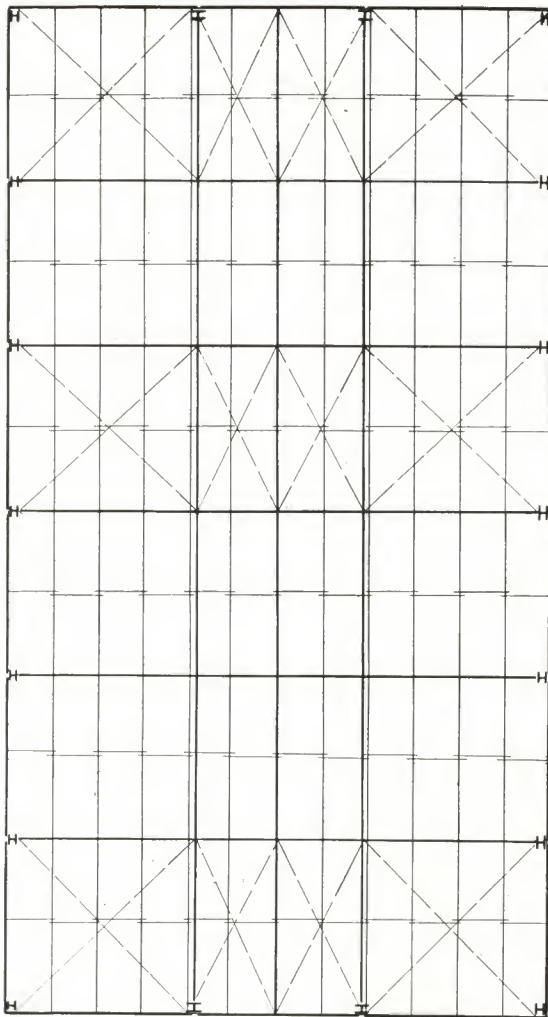
Section C-C.



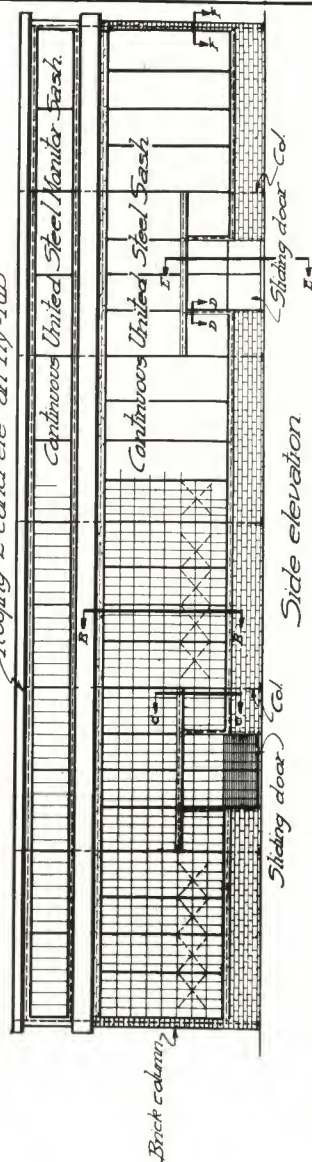
UNITED STEEL SASH		DESIGNED	CHECKED
DETAILS TYPICAL INSTALLATION ONE STORY SAWTOOTH FACTORY BUILDING.		DRAWN <i>Miller</i>	REVISED
		TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.	DRAWING NO. 1025-B.

TRUSSED CONCRETE STEEL CO.

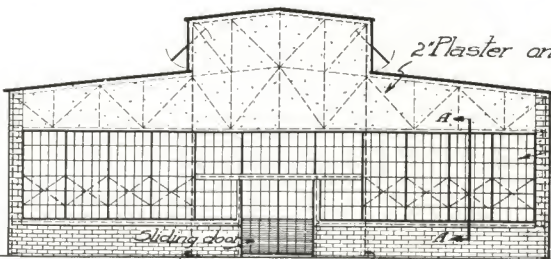
DETROIT MICH., U. S. A.



Roof plan.



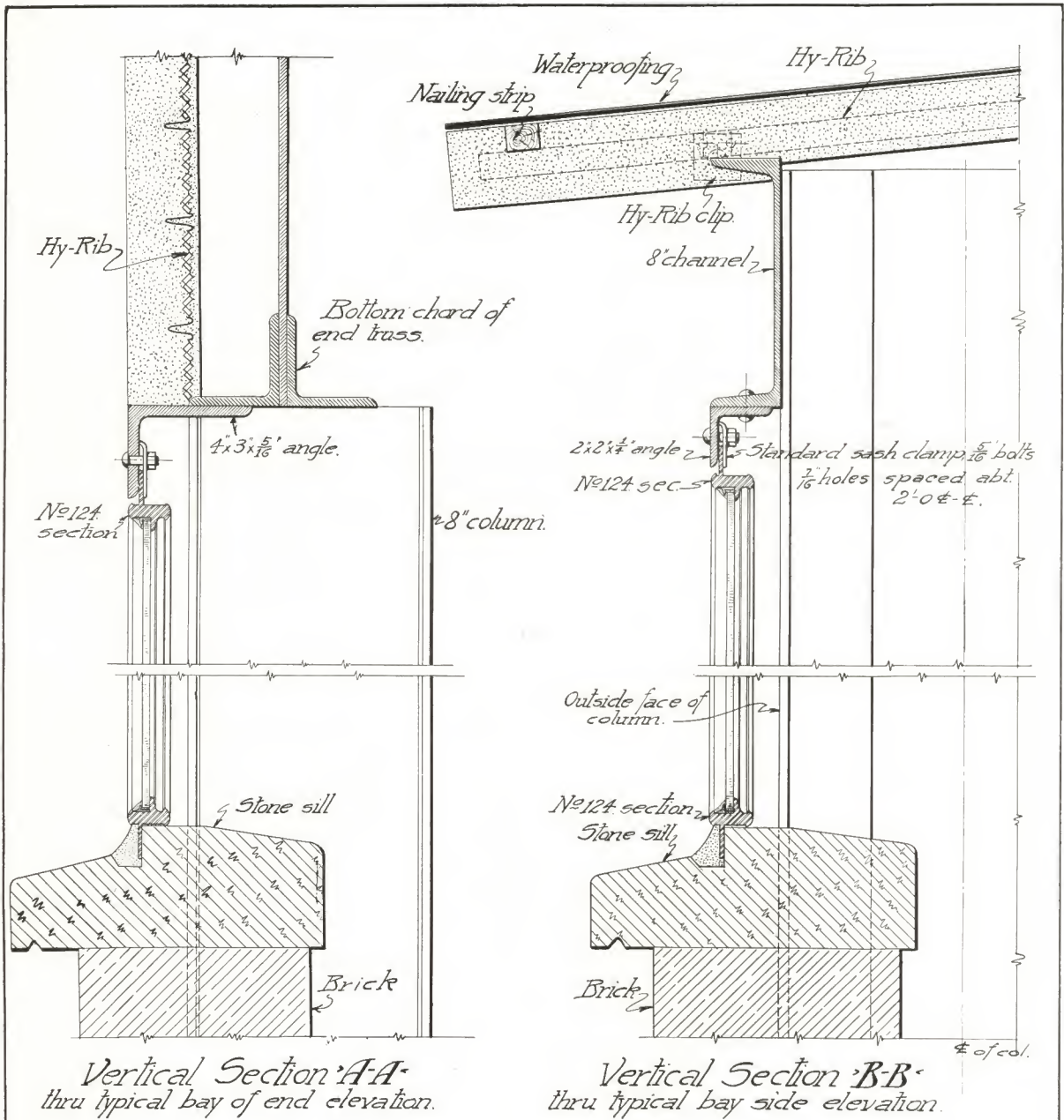
Side elevation



End elevation.



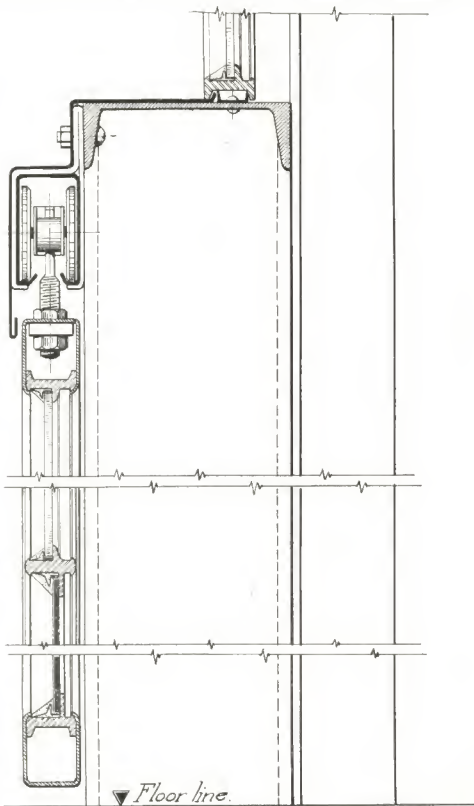
UNITED STEEL SASH		DESIGNED	CHECKED
TYPICAL INSTALLATION ONE STORY FACTORY BUILDING.			
		DRAWN Hillley	REVISED
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.		DRAWING NO. 1024-A	



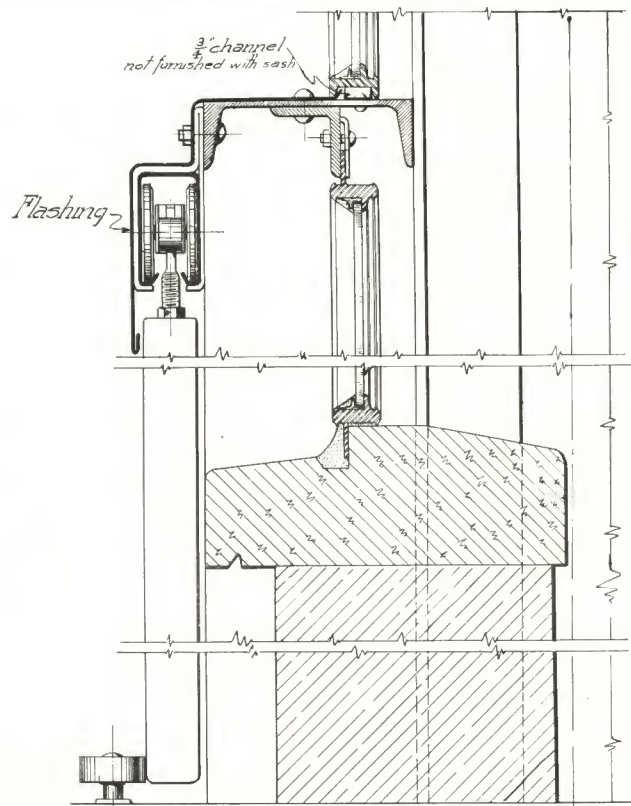
UNITED STEEL SASH		DESIGNED	CHECKED
DETAILS TYPICAL INSTALLATION ONE STORY FACTORY BUILDING			
		DRAWN <i>Hilley</i>	REVISED
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.		DRAWING NO 1024-B.	

TRUSSED CONCRETE STEEL CO.

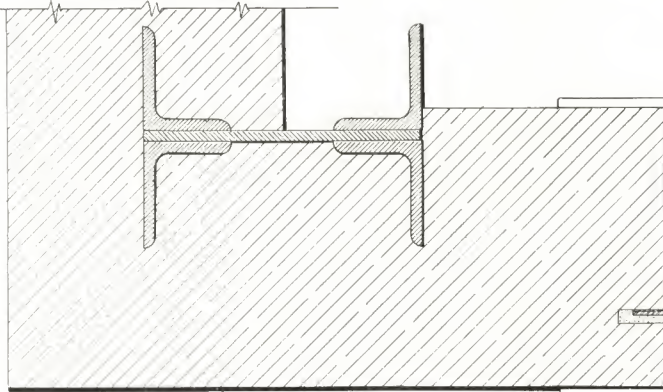
DETROIT MICH., U. S. A.



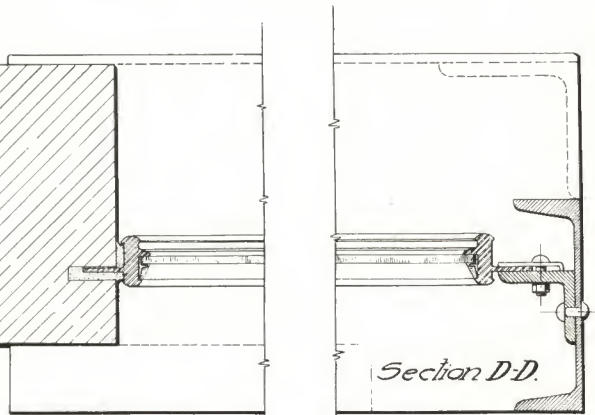
Section E-E.



Section C-C.



Section F-F
of end elevation

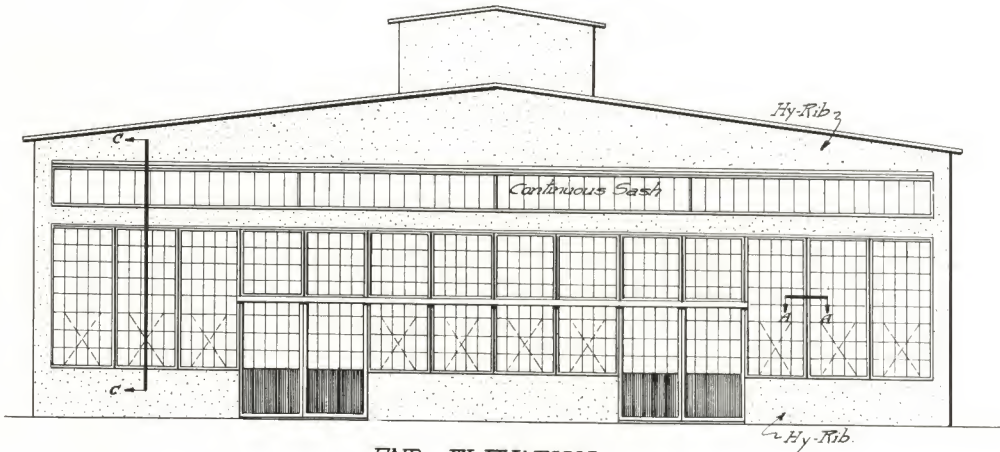


Section D-D.

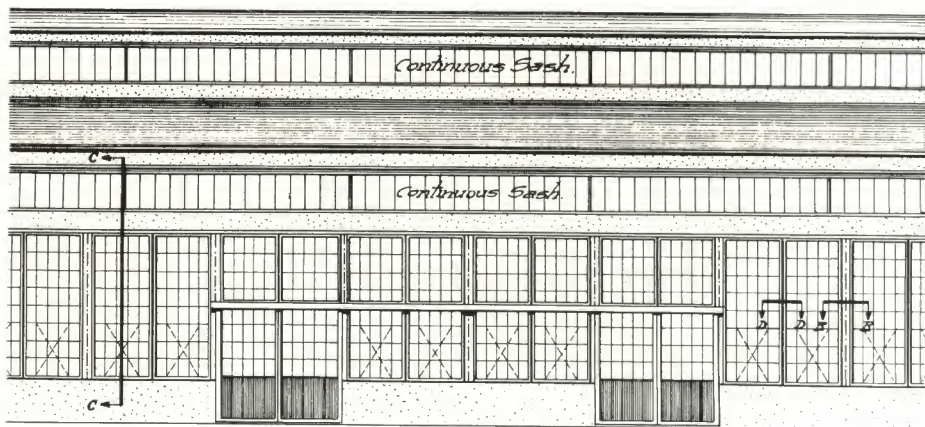


UNITED STEEL SASH		DESIGNED	CHECKED
DETAILS TYPICAL INSTALLATION ONE STORY FACTORY BUILDING.		DRAWN	REVISED
		Hillley	
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.		DRAWING NO 1024-C.	

U^{nited} S^{teel} SASH



END ELEVATION.



PART OF SIDE ELEVATION.



UNITED STEEL SASH		DESIGNED	CHECKED
TYPICAL INSTALLATION ONE STORY FACTORY BUILDING		DRAWN	REVISED
		<i>May</i>	
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.		DRAWING NO 1026-B	

TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.

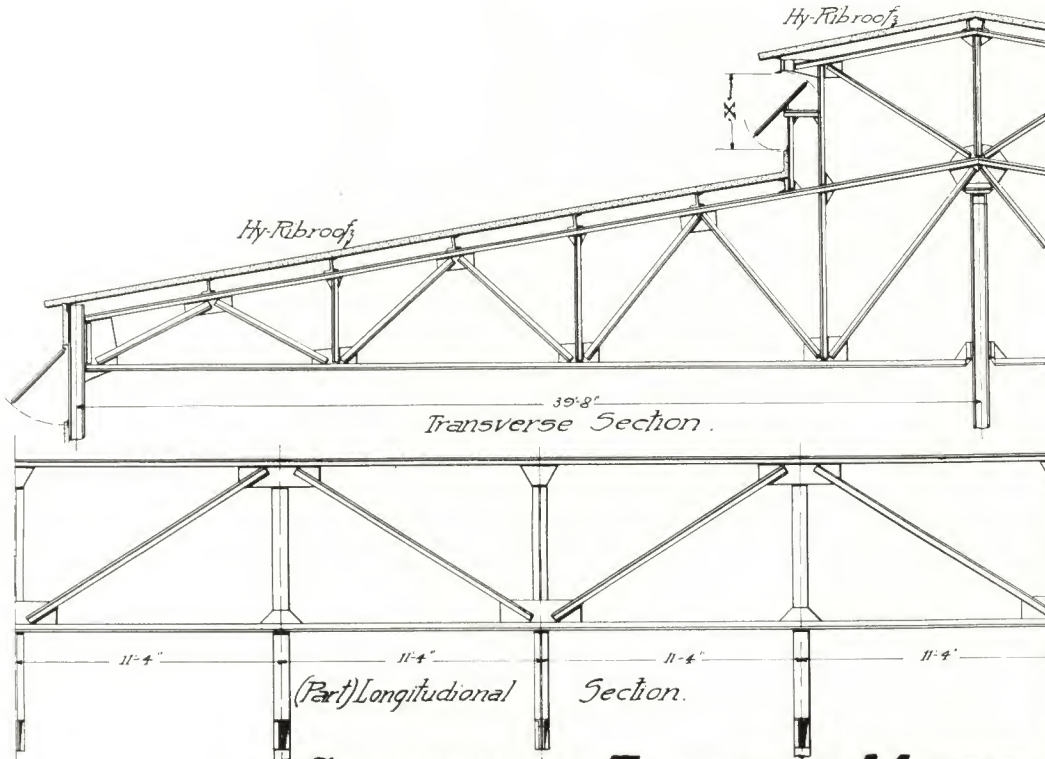


Table of Dimensions
of heights of openings.

Pivoted sash.	
3'- 0"	
3'- 2"	
3'- 4"	
3'- 6"	
3'- 8"	
3'- 10"	
4'- 0"	

SUGGESTION FOR TRUSSES FOR MONITOR CONSTRUCTION USING CONTINUOUS CENTER HUNG UNITED STEEL SASH.

Notes:

Intermediate supports are to be supplied not more than 7ft. apart to properly support 6" channel and to act as support for operating device.

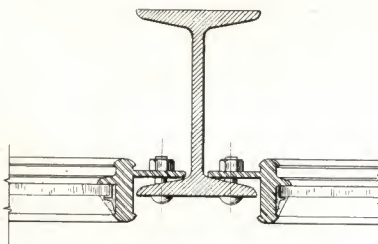
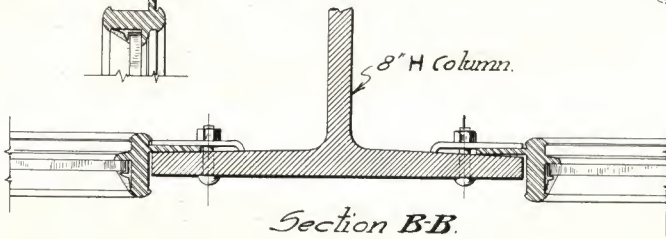
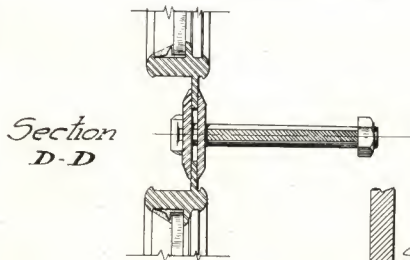
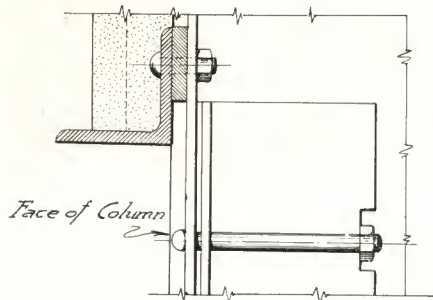
No structural steel furnished with the sash.

Tables of widths are not given as it is possible to fit any width by means of the type 'D' expandable mullions which are used.

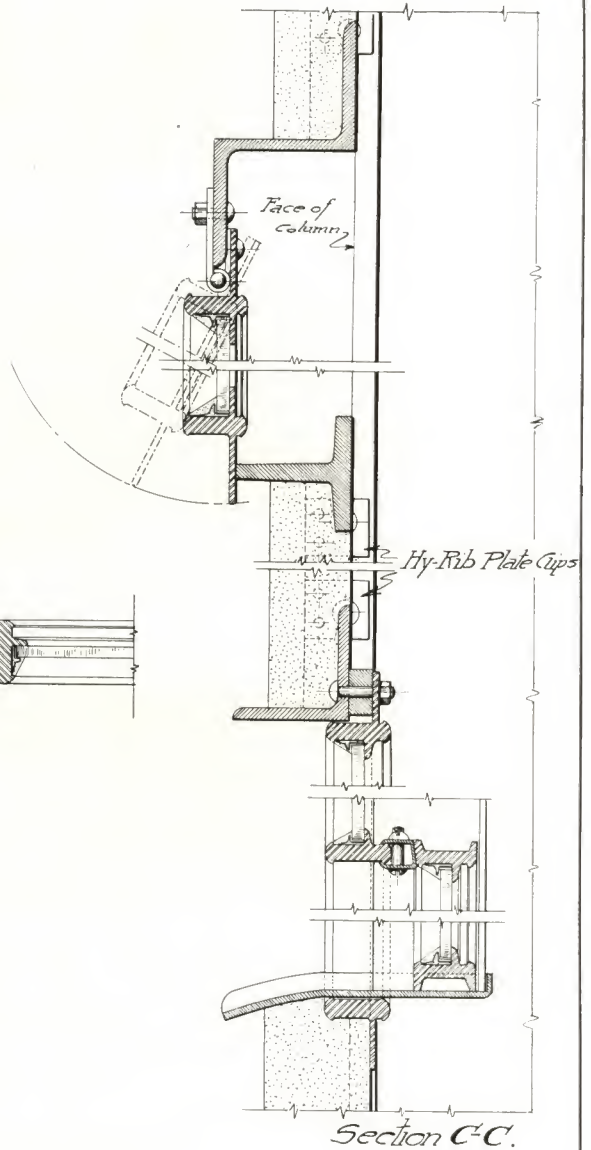
Glass:- Height of glass 2" less than height dimensions of opening.



UNITED STEEL SASH	DESIGNED	CHECKED
TYPICAL INSTALLATION ONE STORY FACTORY BUILDING		
	DRAWN Millet	REVISED
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.	DRAWING NO. 1026-A	



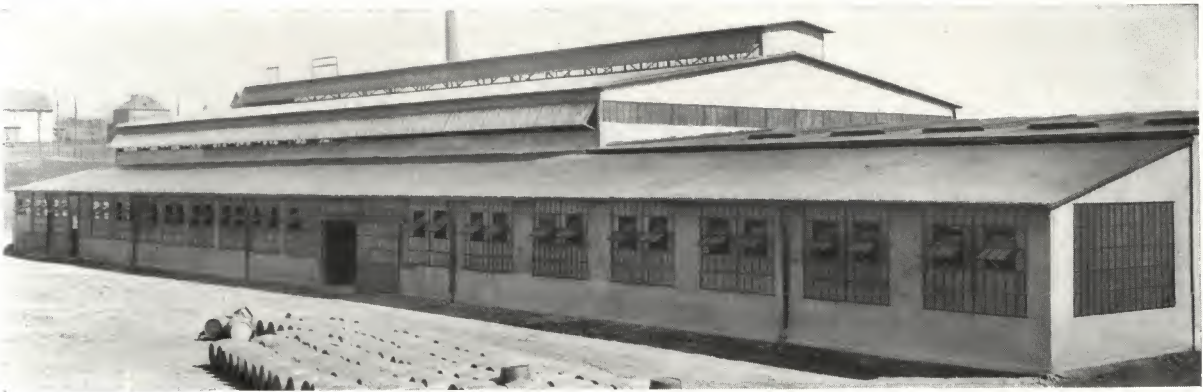
Section A-A.



UNITED STEEL SASH		DESIGNED	CHECKED
DETAILS TYPICAL INSTALLATION ONE STORY FACTORY BUILDING.		DRAWN <i>Miller</i>	REVISED
		DRAWING NO. 1026-C.	
TRUSSED CONCRETE STEEL COMPANY DETROIT, MICH.			

TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.



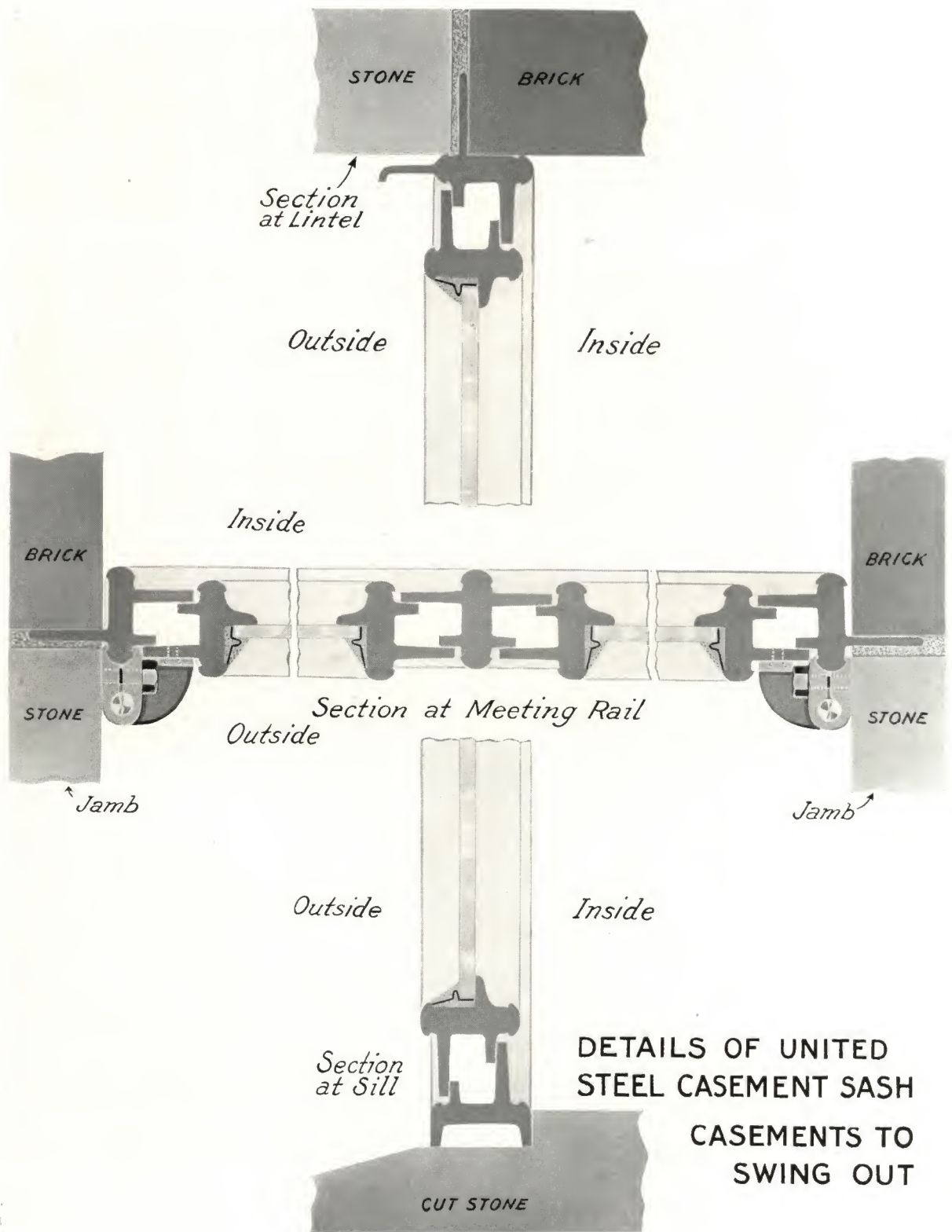
Two of the Buildings at Our Youngstown Plant.



Brass Foundry, Bath Iron Works, Ltd, Bath, Me.

H. P. Converse Co.,
Engineers.

Modern One Story Fireproof Factories with United Steel Sash in side-walls
and monitors. Hy-Rib Concrete Construction for roofs and sidings.



TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.



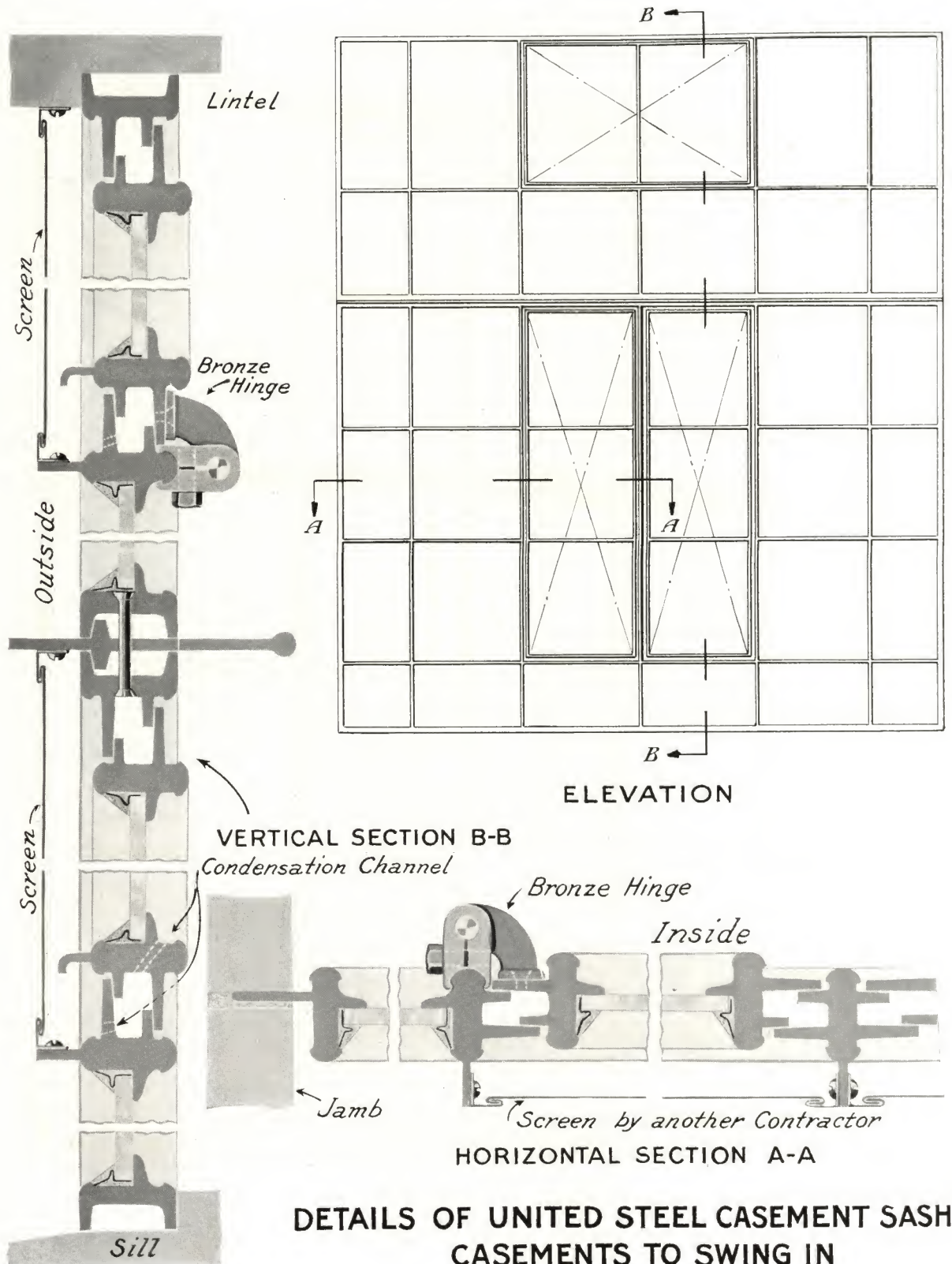
United Steel Casement Sash

United Steel Casement Sash are made of the best quality of medium rolled steel. These sections are combined by multiple dies operated by means of powerful presses, and are therefore absolutely accurate and uniform throughout, as practically all hand labor is eliminated. All joints are carefully mitered and the sash have a particularly neat and attractive appearance. The special sections around the ventilator have been designed so as to form a perfect weathering, which will effectively shut out wind and rain. The sash is fitted with heavy bronze hinges and with hardware which has been carefully designed with a view to its fitness in every detail for this particular type of sash, and can be relied upon to be perfect in every respect.

United Steel Casement Sash are manufactured in several types as follows: Sash to open out, being hung at the sides or at the top and sash to open in being hung at the sides or at the bottom.

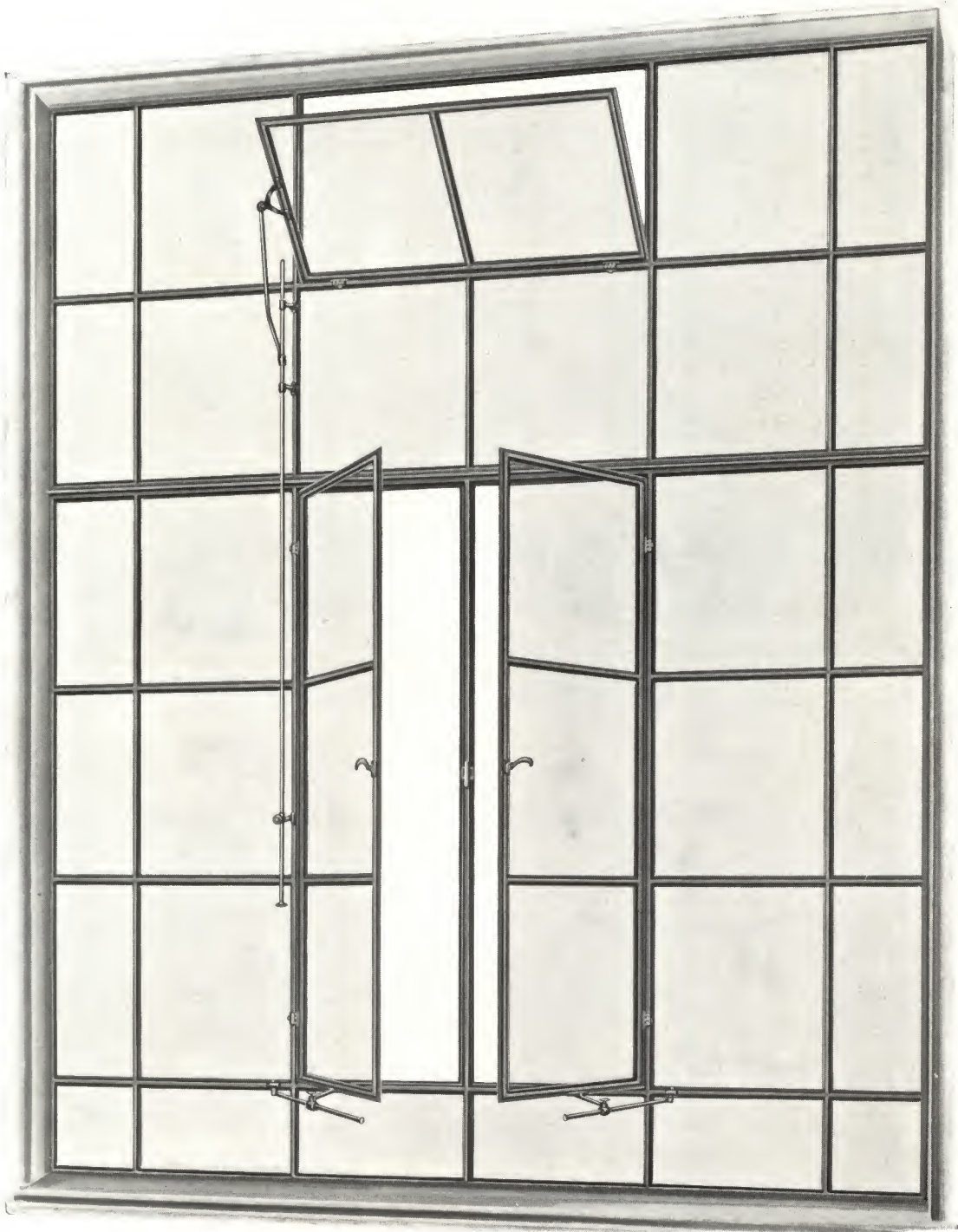
This type of sash is particularly adapted for use in office buildings, schools, etc., where a type of sash is required which has a higher grade of finish and hardware than is supplied in the ordinary type of steel sash. By referring to the details on page 84, it will be noticed that these sash may be readily screened and easily cleaned; all details of shades, etc., may be properly cared for.

Further information, details, etc., will be sent to anyone interested.



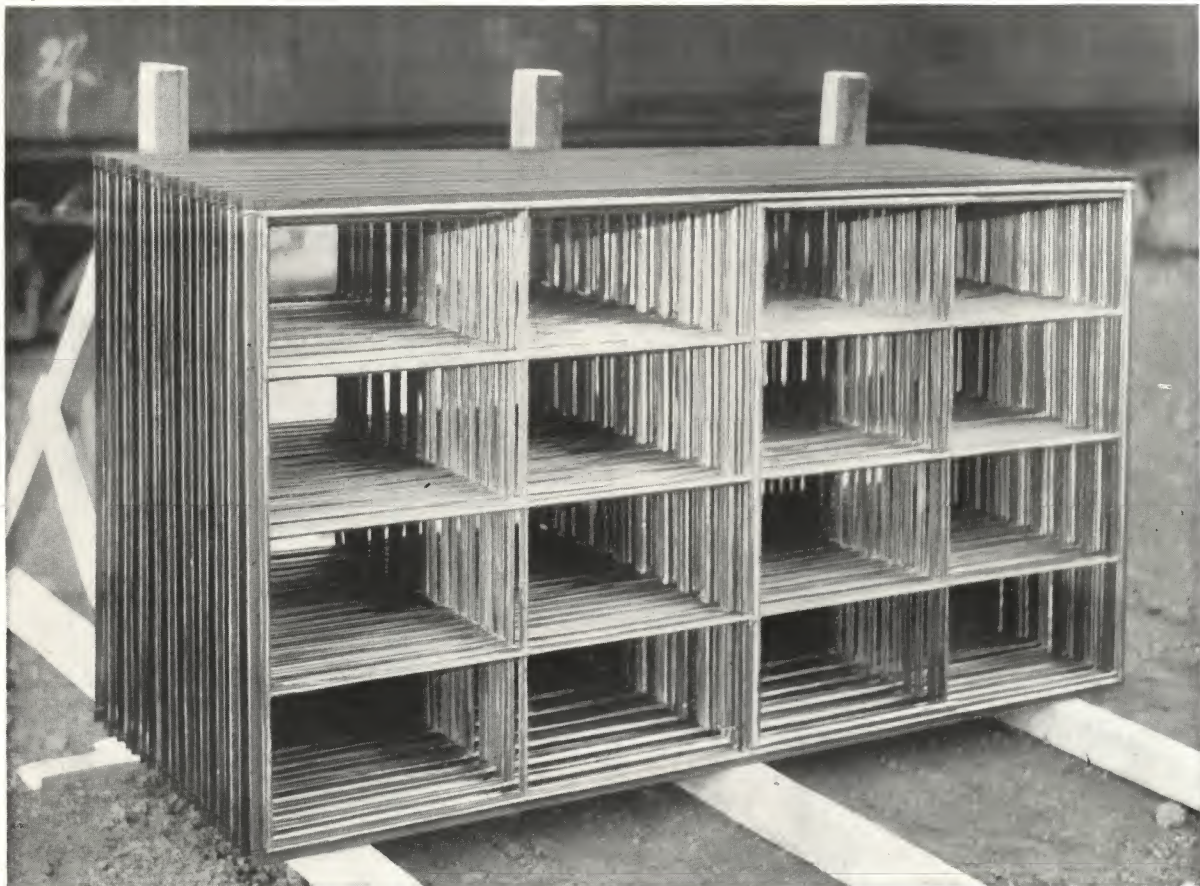
TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.

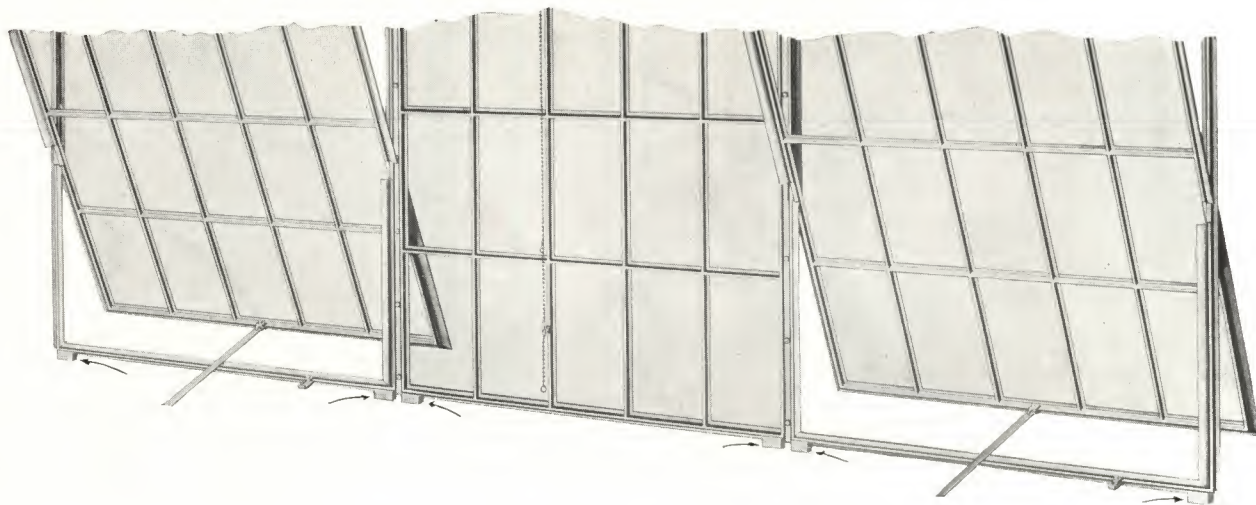


United Steel Casement Sash

United Steel SASH



Proper Method of Stacking Sash When Received at Building Site.



Proper Method of Blocking up Sash in Window Opening.

Blocks Must Be Placed as Shown.

Do not Place Blocks Under Any Other Part of Sash.

Instructions for Handling and Installing United Steel Sash

United Steel Sash are subjected to a very rigid inspection before leaving the factory, to insure their being in perfect condition. If the following suggestions are carried out there will be no difficulty experienced in keeping the sash in this perfect condition, and they will be readily installed, giving entire satisfaction.

All sash containing ventilators have small blocks inserted between the ventilators and the sash and have the ventilators tightly wired to the main frame. *These wires and blocks must not be removed until the sash is erected in the opening and rigidly fastened in place ready to receive the glass.*

Stacking

When the sash arrive at the building site, they should be stacked on edge as shown in cut on opposite page. This is readily accomplished by using three 2x4 stringers, with braces on one end. Care should be taken to see that the sash are not warped or twisted. Sash must not be laid horizontally nor piled one upon the other.

Erection

The sash must be blocked up in position as shown in cut on opposite page. In blocking up, care must be exercised in placing the sash plumb in a true vertical plane, and to have the horizontal muntins of adjoining units in the same horizontal line. This is best accomplished by using a carpenter's level and chalk line. The line must be stretched horizontally between columns and the muntins must be lined up with it, care being taken to keep the several units plumb and in the same vertical plane. Ample clearance should be given at lintels, jambs and sills to allow the ventilators to swing freely. *It is important that blocks should not be placed in any other position than that shown on the cut on opposite page.*

The sash are not designed to carry the weight of any of the building construction. It will be necessary to provide the requisite structural material to support such loads.

Where mullions are furnished, the necessary bolts are supplied. We do not furnish any other structural steel connections, such as angles, bolts, plates, clips, etc. Our standard hardware for operating ventilators is supplied unless otherwise specified. Type E hardware is attached to the sash before shipment. Other types come carefully boxed and listed. This hardware must be attached after sash are glazed, and is put on by contractor erecting the sash.

Glazing

Spring steel glazing clips and one pair of specially designed glazing pliers are supplied with each contract. Six clips should be used with each pane of glass, two on each side and one each at top and bottom.

The glass must be properly back puttied and the putty neatly struck off after the glass has been bedded and fastened with the spring clips.

United Steel Sash are so designed as to permit of glazing from inside or outside of the building. Unless otherwise specified, sash will be manufactured so as to be glazed from the inside of the building.

We recommend the use of putty which does not depend upon absorption for hardening but hardens within itself, and adheres tightly to glass and steel. To obtain the best results United Steel Sash Putty should be used.

The top and bottom rows of glass in the ventilators are $\frac{7}{8}$ " shorter and the glass along the sides of the ventilators are $\frac{7}{8}$ " narrower than the glass in the remainder of the sash. This should be noted in ordering glass.



Buildings of Burroughs Adding Machine Co., Detroit.

Albert Kahn, Architect.
Ernest Wilby, Associate.

United Steel Sash Used Throughout.

Note attractive appearance of large-size lights.

TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.



DeVore-McGormley Co., Engineers.

Edward Ford Plate Glass Co., Rossford, Ohio

Over 70,000 sq. ft. of United Steel Sash used in side-walls, monitors and sawtooth roofs. Over 1,000,000 sq. ft. of Hy-Rib Concrete Construction used for roofs.

U^{nited} S^{teel} SASH



United Shoe Machinery Co., Beverly, Mass.
Entire Buildings equipped with United Steel Sash.

E. L. Ransome, Engineer.

TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.



Turner Construction Co., Contractors. Wm. Higginson, Architect.

One of Six Buildings for the Bush Terminal Co., Brooklyn, N. Y.

All Equipped With United Steel Sash.

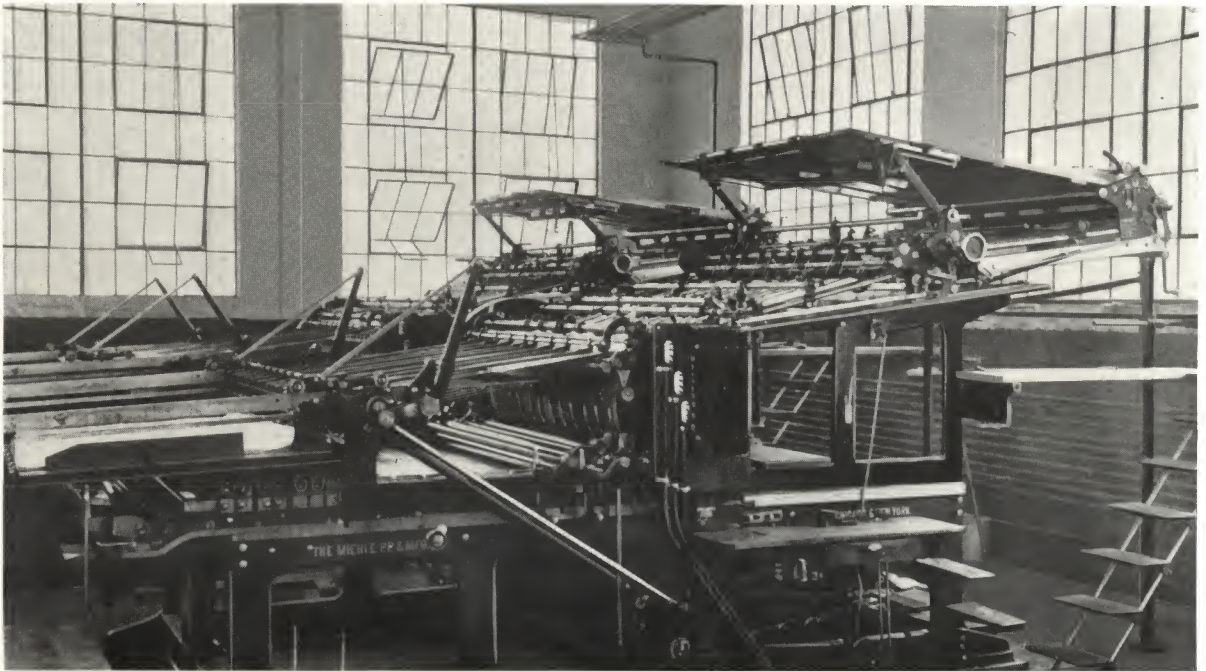


Beaver Power Building, Dayton, Ohio.

Schenk & Williams, Architects.

United Steel Sash Used Throughout.

United Steel SASH



Newhall & Blevins, Architects

Daylight Interiors of Press Room.
Houghton-Mifflin Co., Cambridge, Mass.
Note perfect lighting and absence of dark corners.

TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.



Newhall & Blevins, Architects.

United Steel Sash in Main Building and Saw Tooth Roof.

Houghton-Mifflin Co., Cambridge, Mass.



Gorham Manufacturing Company, Providence, R. I.

United Steel Sash Used Throughout.



General Fire Extinguisher Co., Warren, Ohio.
Daylight Interiors of this large plant, equipped with United Steel Sash.

TRUSSED CONCRETE STEEL CO.

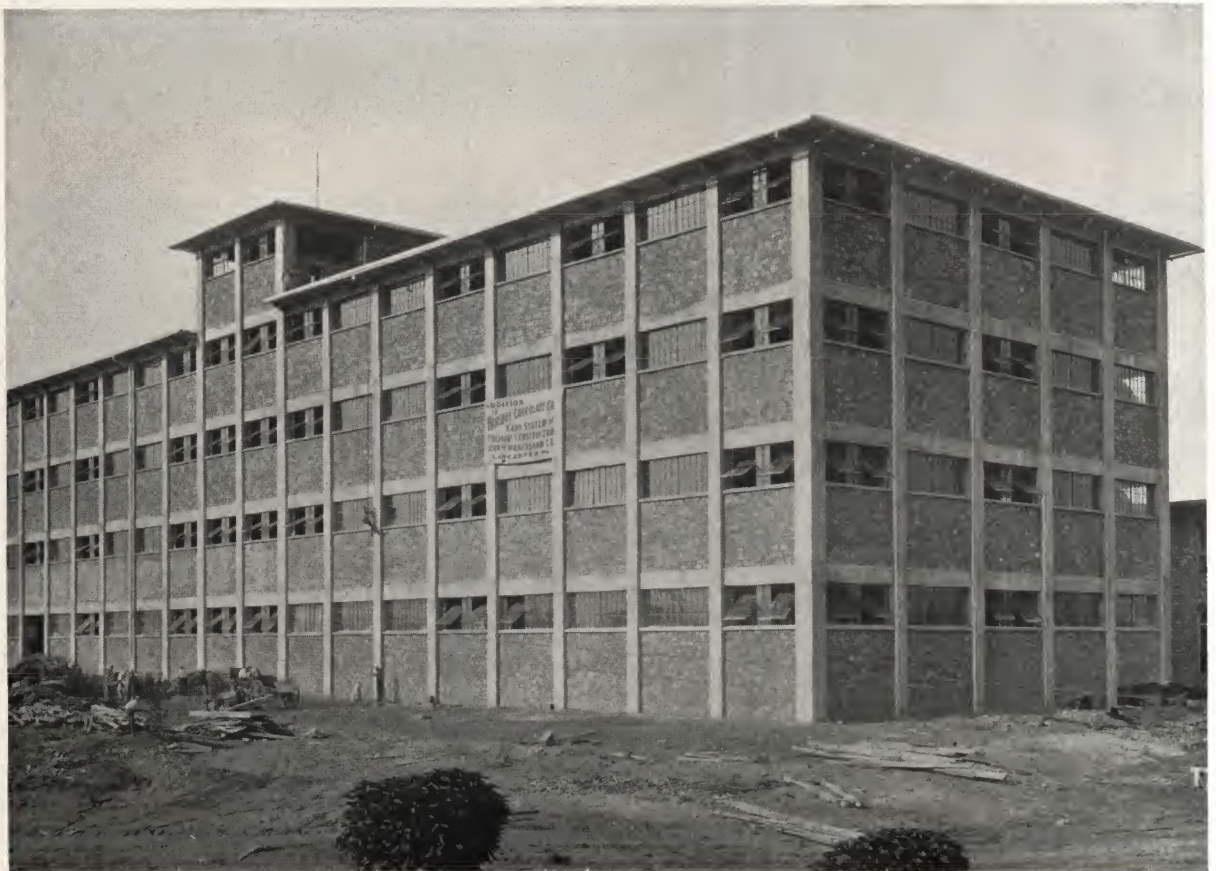
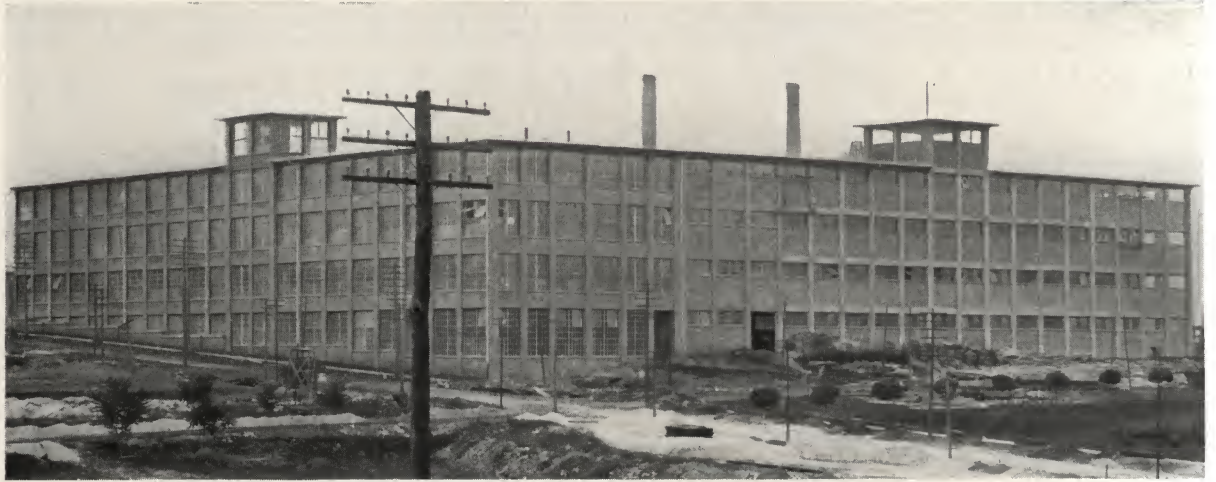
DETROIT MICH., U. S. A.



General Fire Extinguisher Co., Warren, Ohio.

Note that United Steel Sash are outside of wall columns and extend in an unbroken line for the entire length of building.

United Steel SASH



Two Buildings of the Complete Kahn System Plant
for Hershey Chocolate Co., Hershey, Pa.
United Steel Sash Used Throughout.

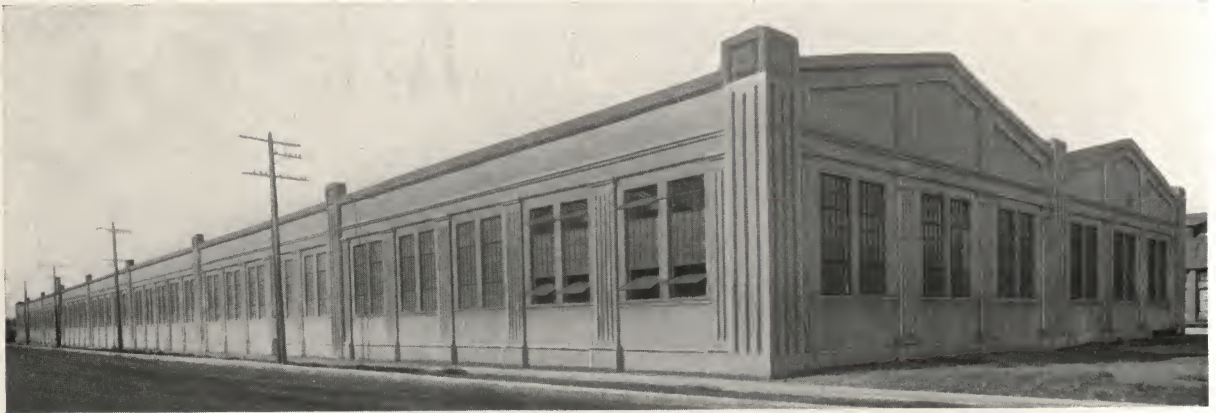
TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.



Haynes Automobile Co., Kokomo, Indiana.
United Steel Sash Used Throughout in Sidewalls and Monitors.

U^{nited} S^{teel} SASH



George Kuhrts, Chief Engineer.

Paint Shop, Los Angeles Railway Co., Los Angeles, Cal.

United Steel Sash and Kahn System of Reinforced Concrete Used Throughout.



Building No. 40, General Electric Co., Schnectady, N. Y.

United Steel Sash Used Throughout.

TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.



American Electrical Heater Co., Detroit, Mich.
Note Flat Ceiling Kahn System Construction.

Albert Kahn, Architect.
Ernest Wilby, Associate.



R. J. Reynolds Tobacco Co., Winston-Salem, N. C.
United Steel Sash in Conjunction with
Kahn System of Reinforced Concrete.

United Steel SASH



J. V. Critchley Machine Co., Worcester, Mass.
United Steel Sash in all Windows.



J. B. Watkins Medical Co., Memphis, Tenn. Harker and Cairnes, Architects.
United Steel Sash Used Throughout.

TRUSSED CONCRETE STEEL CO.

DETROIT MICH., U. S. A.



The 12-Story Lotus Building, Memphis, Tenn. Weathers-Foley Co., Architects.
Kahn System of Reinforced Concrete Throughout.
United Steel Sash on side and rear elevations.

U^{nited} S^{teel} SASH

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